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Keynesianism Today

A Critique of Theory and Economic Policy

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FOREWORD

This is a substantially re-written and enlarged version of the book *From Keynes to Neoclassical Synthesis.* It was necessary to re-write and add to that book not just because of the new facts which have come to light since then. The 1970s were marked by a deep crisis of bourgeois economic thought the gist of which was a sharp criticism of the orthodox economics, a re-appraisal of the values, a review of the old theories and a search for new theories of economic development and regulation of the economic mechanism, notably a restructuring of the theoretical paradigm as a whole.

This led to the collapse of "neoclassical synthesis" which marked the high point in the development of bourgeois economic thinking in the relatively calm 1960s. New trends in the development of Keynesian theory came to the surface. Orthodox Keynesianism, which sprang from Keynes's theory to become a component part of "neoclassical synthesis", was sharply criticised not only by its traditional adversaries, the neoclassicists (notably the monetarists), but also by the new Keynesians, who declared orthodox Keynesianism to be a distorted deviation from Keynes's fundamental ideas and who got down to reconstructing Keynesianism on its true basis.

In the earlier book, I noted that Keynes's theory and the Keynesianism which developed in the 1950s and 1960s were not one and the same thing. However, the latest discussions have brought to light a number of new important aspects of the distinction between the two, and this naturally impelled me to re-write Part One of the book, so as to include matter characterising the theoretical atmosphere in which Keynes's theory had originated. The new retrospective view of Keynes's theoretical contribution has made it possible to identify more clearly the elements of his analysis which his followers now accept and accentuate.

I have not, on the whole, changed my analysis of the Keynesian theory of the business cycle and growth but, in the light of the current discussions, I believe that I have managed to formulate more clearly the specifics in the shaping of the orthodox Keynesian model which laid the foundations for the traditional Keynesian policy of regulating effective demand, a policy which turned out to be ineffective in the atmosphere of inflation and which was incisively criticised in the 1970s.

I have also made some changes in Part Two, entitled "The Neoclassical 'Revival'", with a broader formulation of the causes behind the revival of neoclassical theories, with special emphasis on the importance of chronic inflation and the incapacity of the capitalist state to cope with the growing difficulties by traditional means.

I hope that I have made more meaningful the critical analysis of the neoclassical production function and of the conditions of equilibrium which it implies. This part of the book now contains a critique of the monetarist theory of economic instability which sprang from neoclassical premises. I have added some matter characterising the further development of the neoclassical theory of technical progress to the chapter containing an analysis of the potentialities (and constraints) in the use of production functions for statistical economic analysis of growth factors.

As compared with the earlier book, this one contains two new sections. Part Three, entitled "Post-Keynesianism", presents a comprehensive characterisation of the sources, methodological principles and theoretical conceptions of this new trend in the evolution of Keynesianism. The earlier book contained a description of some of the theories which have become a component part of it, but in the five years since the publication it has become possible to characterise this phenomenon more definitely and comprehensively.

Part Four, "Theory and Economic Policy", has been re-written in the light of the experience of the 1970s. What is more, it has now been possible to compare the experience of the two decades and so to emphasise the essential distinctions in the economic development of the 1970s as compared with that of the 1960s, the distinctions which caused the crisis of the system of government regulation in the 1970s and of orthodox economic thinking.

Since this book was written, developments may have invalidated some of my propositions. I would be grateful to those who do not simply read this book but go on to let me know of their criticism.

Irina Osadchaya

INTRODUCTION

The origination of John Maynard Keynes's theoretical system, the shaping of Keynesianism on that basis, and the evolution of the latter under the impact of changing reality and criticism from various angles, both radical and conservative, are of invariable interest because these processes largely determine and reflect the evolution of bourgeois political economy as a whole.

The emergence of Keynes's theory was the most important event in bourgeois economic thinking in the epoch in which monopoly capitalism developed into state-monopoly capitalism, the epoch of the general crisis of capitalism. It took shape in the 1930s under the influence of the profound crisis that gripped the then dominant neoclassical school. The system of views propounded by the neoclassical school found itself in crying contradiction with the reality. While radical changes were actually taking place, the whole of its theoretical system was predicated on the assumption that the capitalist economic system was solid and "natural", and that free competition provided for the optimal use of economic resources. Moreover, as a result of the First World War and the Great October Socialist Revolution in Russia, the general crisis of capitalism began to aggravate, marking the start of the collapse of capitalism on a world-wide scale. While capitalism was being rocked by the most profound crisis of overproduction in its history (1929-1933), and social conflicts reached an unprecedented acerbity, the advantages of the mechanism of planned economic development and plan-based solution of long-term problems were already being brought out within the socialist economic system that was taking shape. It was becoming obvious that government intervention in the economy was becoming an imperative for the functioning of capitalism. All of this led to the "Keynesian revolution", which was stimulated by the publication of Keynes's book *The General Theory of Employment, Interest and Money.*

Keynes's theory had a tremendous influence on the subsequent development of bourgeois political economy, into which it introduced totally new elements that ushered in its in-depth reconstruction, while simultaneously also causing a restructuring of the economic policy of the contemporary bourgeois state.

The result was a new system of economic views—Keynesianism—with a new methodology and new ideological and practical tasks.

It was a system designed to explain the mechanism on which the capitalist economy functioned in the absence of free competition and perfect information, with the mechanism of interaction between supply and demand farmed out to private persons (entrepreneurs and consumers) failing to ensure full employment of economic resources, as a basis for asserting the need for the government's active intervention in the processes of reproduction.

The criticism levelled by Keynes and his followers at neoclassical theory did something to renew bourgeois economics and to square it with the new features of capitalism, which were determined by the deep-rooted crisis processes, on the one hand, and the growth of government and monopoly trends, on the other.

The "Keynesian revolution" helped to revive, on a new basis, an important department of bourgeois economics, *macroeconomics,* whose purpose is to substantiate the forms and methods of the government regulation of the economy. A brief historical retrospect of the methodology of bourgeois economics, starting with classical political economy, will help to appreciate the importance of this "revolution". The classics—Adam Smith and David Ricardo—developed bourgeois political economy as a science of the laws governing the creation and distribution of social wealth. This was simultaneously a macroeconomic and a socio-economic theory. The break with the classics and the subsequent vulgarisation of bourgeois economics were a process in which it shed both its socio-economic and its macroeconomic aspects. Capitalism having been recognised as the everlasting and "natural" economic system, analysis was no longer centred on the system as a whole, but on the logic of the behaviour of the individual and the firm. The method acquired a microeconomic character. Analysis was centred on the "economic person" seeking to satisfy his requirements, and the firm maximising its profit. It was assumed that under free competition their activities—in accordance with the principles of maximisation—ensured the equilibrium of the economic system as a whole, that is, the optimal distribution and use of resources and equality of supply and demand on the scale of the economy as a whole. The microeconomic method, which determined the whole epoch in the development of bourgeois economics (1870s-1930s) ruled out the emergence of independent, special macroeconomic problems, that is, problems on a national-economic level.

The "Keynesian revolution" was above all a "revolution" in methodology, in the approach to the analysis of economic reality.

Macroeconomic theory deals with an analysis of broad economic aggregates characterising the structure and dynamics of *social production*. According to the well-known bourgeois economist, Émile James, "it does not deal with atomised buyers or sellers acting on their own, but with Aggregate Demand or Aggregate Supply; not with multiple groups of diverse savers, but with Saving or Hoarding; not with the gamut of diversified entrepreneurs, but with Investment as a whole".[1] The laws of macroeconomics differ from those governing the operation of individual economic units. That is why the development of government regulation necessarily led to an analysis of the interaction and interconnection of national-economic aggregates.

The characteristic feature of macroeconomic theory is that it deals mainly with the technico-economic, quantitative aspects of production, as a rule ignoring the socio-economic prerequisites, the internal uniformities of development which are determined by the nature of property and which ultimately guide many of the economic processes within the given economic system.

The basic features of Keynes's macroeconomic approach which determined the subsequent development of macroeconomic theory could, I think, be summed up as follows. First, in contrast to microeconomics, macroeconomics regards national income as the central element of its analysis. The latter (its level and dynamics) is regarded as an embodiment of the results of the functioning of the economic system as a whole and of the interaction of such of its aggregates as consumption, investment, savings, money supply, etc. Second, in contrast to the microeconomic approach, the macroeconomic approach implies a discrepancy between the conditions of microeconomic equilibrium (i.e., the conditions for maximising profit by the enterprise and consumption by the individual) and the conditions of macroeconomic equilibrium (i.e., optimal distribution and full employment of resources). Third, there is the implication that the factors which determine the demand for goods and resources, and the factors which determine their supply are not identical, which is why there may be long- and short-term discrepancies between the supply of and demand for goods, between savings and investments, and between manpower resources and their employment in production.

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[1] Émile James, *Histoire de la pensée économique au XX-e siècle*, Paris, Edition Montchrestien, Paris, 1955, p. 370.

The macroeconomic approach opened great scope for the use of mathematical models which gave the theory the mechanism for formalising national-economic interconnections and the possibility of studying their behaviour in various economic situations (that is the basis for the broad development, for instance, of the modelling of the business cycle). In addition, the combination of mathematical formalism with national income statistics, and the creation of econometric models—apart from their use in the practice of forecasting—made it possible to run through alternative versions of national-economic interconnections under the influence of definite changes in this or that set of aggregated indicators (say, government expenditures), or in the coefficients synthesising them.

All of this helped to transform macroeconomic theory into the ideological and practical underpinning of government regulation of the economy, while its advocates, taking a leaf out of Keynes's book, began ever more frequently to develop "high theory" concurrently with the holding of government jobs as experts and advisers to various governmental agencies.

Keynesian theory had a tremendous influence on the subsequent development of bourgeois economics because the specific features of capitalist economic development in the 1930s (the most profound economic crisis and the protracted depression that followed) which had stimulated the emergence of the theory were not in any sense casual, but signalled the new stage in the development of the basic contradiction of capitalism, that between the social character of production and the private form in which its results are appropriated. With the vast development of the productive forces, the socialisation of production, and the aggravating of the general crisis of capitalism, the mechanism of private capitalist production ceased to operate automatically. The acts of the state as a factor helping to realise the created product, to stimulate new investment and to increase employment among a growing population, and to ensure the development of the infrastructure became an objective necessity. That is why Keynesian theory, providing an analysis of the general conditions of realisation, was a useful instrument of analysis of the capitalist economy not only in a state of depression, but also in a state of upswing. That is also why bourgeois economists tried to use Keynesian economic theory in tackling the new problems produced by postwar economic growth.

The 1950s and 1960s were a period of all-round development of the version of Keynesianism which is now known as *orthodox Keynesianism.* It had its beginnings even before the Second World War, and its most prominent exponents were John Hicks (Britain) and Alvin H. Hansen and Paul Samuelson (United States). This orthodox version of Keynesianism took shape in a peculiar manner and not without the influence of neoclassical theory. The peculiarity lay in the fact that an effort was made to reconcile Keynesian theory with neoclassical theory in an attempt to create a "neoclassical synthesis" in which Keynesian theory was to explain the particular case of "equilibrium with less than full employment", while neoclassical theory claimed to substantiate the more general uniformities of the functioning of the economic system, including optimal distribution of resources, price-formation and income distribution. The

Keynesian methods for managing effective demand were accepted as the basis for anti-recession and counter-inflation policies by the governments of all the developed capitalist countries. Alongside business cycle policy based on the regulation of aggregate demand by means of fiscal and monetary instruments efforts were also made to work out a policy of economic growth and the conduct of a specific government policy for the medium-term and long-term programming of the economy.

The positions of Keynesianism were consolidated by the fact that there had been no economic crises of any profundity in government-regulated West European economies from the latter half of the 1940s to the mid-1960s. The unusually long postwar upsurge in the United States in the 1960s—it lasted for nearly eight years—was proclaimed to be a triumph of Keynesian economic policy.

All of this seemed to suggest that the mechanism of government regulation had been more or less adjusted, while the theory behind it was valid and enjoying a high scientific weight. However, these views were refuted by later developments.

The changes which occurred in capitalism's socio-economic conditions in the late 1960s and in the 1970s generated a series of crises—raw-material, energy and monetary—and runaway inflationary processes which markedly unhinged the whole world capitalist system. Acute problems developed into the cyclical crises of 1969-1971 and 1974-1975. The latter was the gravest since the Great Depression and the first postwar crisis to hit all the developed capitalist countries. These crises coincided with the rapid development of inflationary processes. There was a collapse of standard Keynesian business cycle policy schemes, when attempts were made to contain inflation, which usually coincided with the upsurge phase, by contracting demand, and conversely, to overcome the crisis by expanding demand. The contradictory and ineffective acts of bourgeois governments in these conditions were largely explained by the fact that it was impossible simultaneously to expand and to contract demand in a situation in which inflation developed alongside a crisis decline in production.

It became obvious that the Keynesian doctrine of government regulation of the economy through its stimulation by means of deficit financing was altogether untenable. It became also hard to manipulate the interest rate flexibly because it had soared.

The difficulties in using Keynesian instruments to check the growing anarchy in the capitalist economy were compounded by the collapse of the Bretton Woods international payments system, which had been founded in 1944 on the basis of Keynes's theoretical conception providing for the establishment of institutions to regulate the world capitalist economy. The crisis of the dollar, as manifested in its devaluation and the ending since 1971 of its exchange for gold made the use of Keynesian methods extremely difficult not only for regulating monetary relations, but also for the currency of money within individual countries. The flood of dollars not anchored in gold and moving from one country to another made the inflationary process even more uncontrollable.

All these processes, causing a crisis of the system of government regulation of the economy, had a tremendous effect on bourgeois political economy. The hollowness of the regulation system also signified a hollowness of the theoretical basis which had served as its ideological and practical backup. This marked the beginning of a new crisis of bourgeois economics, which led to another re-appraisal of values, sharp criticism of the old orthodoxy, and a fresh quest for new doctrines and new approaches to economic analysis. Among the specific features of the crisis was the growth of centrifugal forces stimulating the inner theoretical and ideological disintegration and differentiation of bourgeois economic thought. It also suggested ways leading to new forms of synthesis as a substitute for neoclassical synthesis.

It is possible to bring out the following main lines in these processes which were to exert an influence on the shaping of the structure of bourgeois economic thought in the future.

—There was a sharp criticism of Keynesianism by representatives of the neoclassical school who now adhere to monetarism, a fairly influential trend.

—Under the impact of the mounting criticism of Keynesianism, attempts were made to revise its orthodox version, to renew, modernise and thus to rehabilitate Keynesian theory.

—There was growing criticism of the orthodox approach as a whole for the narrowness of its "pure" economic analysis, for its acceptance of socio-economic conditions as being "given", while the task was to study their influence on economic processes and to seek ways of reforming these.

—On that basis, there was a revival of institutionalism, with its broader approach to the analysis of socio-economic phenomena and with its ideology of bourgeois reformism. This was also connected with a new phenomenon like the extensive spread of a radical political economy based on a peculiar "renaissance" of Marxism and seeking to integrate some propositions of Marxian theory into its own theoretical constructs.

—Against this background there was increasing evidence of the shaping of a new trend in bourgeois economics, post-Keynesianism, which claimed to provide a comprehensive alternative to neoclassical synthesis and which, for its part, was a synthesis of unorthodox Keynesianism and contemporary institutionalism.

The emergence of Keynesianism and its evolution are connected with deep-going shifts in the structure of contemporary capitalism, with a growth of government and monopoly trends, and with the formation of a new "social order", which was to produce a more or less objective basis for the formulation of government economic policy designed for tackling the most painful internal problems of capitalism—crises, unemployment, underuse of production capacities, stagnation and inflation; and to substantiate a policy for creating the conditions for high and stable rates of growth over the long term. That is why the examination of the individual theoretical constructs of the Keynesians started from the two-fold nature of contemporary bourgeois economics, called upon to perform two functions: an ideological one and a practical one. The existence of these two functions reflects the actual fact that bourgeois economics also has—alongside the ideological task of producing the various methods and forms of class justification and vindication of capitalism—also a practical order to fill, and this calls for an objective analysis of some processes in the sphere of reproduction and exchange. This practical order has gained in urgency as the regulation and programming of the capitalist economy developed. There is a contradiction between the class interests of the bourgeoisie and the possibilities for cognising economic reality. The class interests of the bourgeoisie hamper genuine scientific cognition of the uniformities of historical development; they are incompatible with an analysis of the internal laws of the capitalist mode of production, which determine its exploitive character. But these same interests, far from hampering, in effect make it necessary to understand the quantitative interconnections which determine the reproduction process; they require an analysis of the balance between supply and demand on the labour, capital and commodity market and thorough consideration of every aspect of the currency of money and finance.

It goes without saying that both functions of bourgeois political economy are geared to the fundamental task of producing an apologia of capitalism and its defence in the historical competition with socialism. But they make for different forms and methods of defence. That is why a critical analysis of bourgeois economics and, consequently, of Keynesianism as well, has a two-fold purpose. On the one hand, because bourgeois economics is a part of the ideological structure of the capitalist society and serves to vindicate capitalism, we are engaged in an implacable ideological struggle against it. Our task is to expose the class tenor of the economic theories, forms and methods used to cover up the exploitive character of the capitalist mode of production; to expose the apologetic character of the various theories of capitalism's "transformation" and the possibility of overcoming its contradictions by means of government regulation.

On the other hand, we make a study of contemporary economic theories so as to bring out the elements of genuine knowledge, to identify the scientific elements, which no economic theory can do without. That is precisely what Marx did when he wrote his *Capital* and made a critical re-appraisal of all earlier economic writings. That is also what Lenin did. He said bourgeois economists were "learned salesmen of the capitalist class", which is why "the task of Marxists ... is to be able to master and refashion the achievements of these 'salesmen' (for instance, you will not make the slightest progress in the investigation of new economic phenomena without making use of the works of these salesmen) and *to be able* to lop off their reactionary tendency, to pursue our *own* line and to combat the *whole line* of the forces and classes hostile to us".[1]

In this context, the arguments about whether present-day bourgeois economics is or is not "scientific" need to be made more precise. It is unscientific because it lacks the esoteric method (as Marx put it) which makes it possible to delve into the inner substance and concatenation of things and which Marxism characteristically has. At the same time, it does contain scientific elements to the extent to which it is capable, in virtue of its exoteric character, to describe and classify the connections and phenomena which appear on the surface.

This book has a fairly wide chronological framework: from the 1920s, which paved the way for the crisis of the neoclassical school and which culminated in the emergence of Keynesianism, to the 1970s, when the orthodox economic system, shaped in the course of the subsequent decades, underwent another crisis under the influence of its own inner contradictions and the contradictions arising from the regulation of the bourgeois economy, with the consequent restructuring of this system and a search for new conceptions for the purpose of renewing it.

The book consists of four parts. Part One considers the origination of Keynes's theory and the formation of orthodox Keynesianism.

In analysing the theory of Keynes, I note those elements of it which led to the foundation of orthodox Keynesianism, and also bring out those of its aspects which, as critics of orthodox Keynesianism believe, make it possible to construct a new, "genuinely" Keynesian theoretical system. Consequently, the need to take another look at Keynes's work springs from the need to re-read and reflect on it so as to gain a better understanding of the substance of the new processes in economic thinking in the 1970s, when the crisis of Keynesianism (of its orthodox version) was followed by a peculiar "renaissance" of Keynesian theory.

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[1] V. I. Lenin, "Materialism and Empirio-Criticism", *Collected Works*, Vol. 14, 1968, pp. 342-43 (here and elsewhere Progress Publishers, Moscow).

Part One then goes on to examine the Keynesian theories of business cycle and growth, and also the substance of neoclassical synthesis which, in their aggregate, went to shape the Keynesian orthodoxy of the 1960s that was recognised as a theoretical basis of a "mixed economy" and government regulation of capitalist reproduction.

Part Two deals with the theories which began to develop in the 1960s as an antithesis to the Keynesian revolution and a direct continuation of neoclassical traditions. In Western writings, the emergence of this complex of theories was designated as a "neoclassical revival". Here I also analyse the neoclassical growth models, their theoretical premises and practical significance, and also the development of the monetary theory of the cycle.

Part Three examines the effects of the crisis of bourgeois political economy in the 1970s. With the universal criticism and disappointment that gripped bourgeois economic thinking in that period, and with the total fiasco of Keynesian theory, following the failure of policies based on its recipes, there was a peculiar "renewal" of Keynesianism. Accordingly, the main analysis here concerns the development and specific features of the new trend in bourgeois political economy—post-Keynesianism—within whose framework this "renewal" occurs.

Part Four considers the correlation between economic theory and economic policy in an effort to establish the practical importance of these theories. I think that it is necessary to dispel the somewhat oversimplified notions about the connection between economic theory and conomic policy according to which any economic theory n the sphere of reproduction necessarily culminates in a ist of practical recommendations for the government, and vice versa, every one of the government's acts in the economic sphere is theoretically substantiated. There is, in fact, no such direct connection. That is why I examine the main lines along which economic theory influences economic policy to show its role in the shaping of capitalist regulation and the development of contradictions in such regulation. Here I concentrate on the problems and complexities of the economic policy in the 1970s, which plunged bourgeois economics as a whole, and Keynesian theory in particular, into yet another crisis.

This book is based on an analysis of British and American economic writings, which have much in common both in terms of historical tradition concerning the forms and methods of contemporary analysis and in terms of determining the forms and methods of government intervention in the economy. The impact of theory on policy is an aspect of this analysis which is based on US experience.

PART ONE

KEYNES'S THEORY AND THE DEVELOPMENT OF KEYNESIANISM
(1930s-1960s)

CHAPTER ONE

THE CRISIS OF THE NEOCLASSICAL SCHOOL. THE EMERGENCE OF KEYNESIANISM

1. Economic Thinking in Britain in the 1920s and Early 1930s

Keynes published his famous work, *The General Theory of Employment, Interest and Money,* in 1936, but the main idea contained in that work began to gestate much earlier and not without the influence of the new trends which stirred economic thinking in Britain in the late 1920s and early 1930s. These new trends, for their part, were a reflection of the tremendous difficulties through which British imperialism was going after the First World War.

The development of the contradictions of the first stage in the general crisis of capitalism brought about a sharp worsening in Britain's economic condition, a country which Marx called the "true summit of the bourgeois society in Europe".[1] The crisis of the colonial system, the collapse of its export monopoly, and the parasitic degeneration of the whole inner socio-economic structure which had been built up through the vast export of capital and goods, all of this plunged the British economy into a state of protracted stagnation in the inter-war period. The growth rate was sharply slowed down. Even in the 1920s, with all the developed countries going through a period of postwar upswing, British industry did not surpass its 1913 level. From 1900 to 1913, unemployment came to between 2 and 5 per cent, but in the 1920s it shot up to 12 per cent, and in the 1930s to 16 per cent. The underloading of industrial capacities also became chronic, with the greatest decline in the traditional industries like coal, textiles, and shipbuilding, and entire geographical regions of Britain connected with them, which became areas of extinction and chronic depression. With the sharp slowdown in growth rate and contraction of export, the parasitic structure of the economy produced a chronic balance-of-payments deficit. Faced with growing economic and social contradictions and intensifying national liberation struggle in the colonies, the monopoly bourgeoisie increasingly turned to the government. The idea of free trade and non-intervention by the government in the economy was found to be hopelessly out of date, and there was a clamour for a "strong government" to ensure the conditions for the normal functioning of the economy.

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[1] Karl Marx/Friedrich Engels, *Werke*, Bd. 18, Dietz Verlag, Berlin, 1969, S. 608.

But the old edifice of neoclassical theory, erected on the foundation of Britain's erstwhile economic prosperity and serving as one of the bulwarks of British conservatism, was not shaken all at once. Up until the crisis of 1929-1933 and the appearance of Keynes's *The General Theory of Employment, Interest and Money*, the development of British economic thinking put the finishing touches to the neoclassical tradition, worked out in such detail by Alfred Marshall. But this already carried within itself the seeds of its own disintegration: under the impact of the contradictions of existing reality and the bourgeoning system of socialism, it tended to bring to the fore problems which could no longer be solved within the framework of neoclassical theory and merely went to emphasise the limitations of the neoclassical approach.

Some researchers also emphasised another important point, which has to be accepted. While Marshall's theory was formulated within the framework of neoclassicism, it had more realistic features than the abstract system of general equilibrium then widely accepted on the continent (Léon Walras and others). The US economist Alfred S. Eichner writes: "As a result, the neoclassical theory that gained ascendancy in Great Britain and the rest of the English-speaking world was not as abstracted from reality as the neoclassical theory that was developed on the continent by Walras and his followers. The contrast was reflected in the difference between the time-specific (short-

and long-run), partial equilibrium analysis of the Marshallians and the timeless, general equilibrium analysis of the Walrasians. With this point in mind, it is easier to understand the transformation of Keynes as a theorist from a minor Marshallian specialising in monetary matters to the most effective challenger of orthodoxy since the triumph of marginalist analysis. For in Keynes, the separate Ricardian and institutionalist sides of Marshall finally burst through in a new type of theoretical synthesis, one finally responsive to the political problems of the day."[1]

Arthur C. Pigou, one of Marshall's most capable students, was prominent among those who surrounded the young Keynes and in discussions with whom the latter's own views were hammered out. In 1908, Pigou headed the chair of political economy at Cambridge, where he taught for 35 years, until 1943. While being a loyal advocate of Marshall's theory and elaborating and putting into a system his basic principles, Pigou could not remain immune to the new trends of the epoch: the growing influence of the world's first socialist state, the spread of the working-class movement and the increasing popularity of socialist ideas in "good old" England. The economic theory which Marshall designated as "economics" and which the neoclassicists tried hard to turn into "pure" theory began gradually to touch on the existing contradictions and the requirements of state economic policy through the efforts of Pigou. According to the US historian of economic thought Ben B. Seligman, "Pigou offered little beyond pure Marshall, yet in his own thinking he went beyond the master, searching for new ways to apply abstract principles to economic action. His brilliant inquiry into how the state might justifiably intervene in economic affairs illustrated his abiding concern with practical matters. In this sense at least, Pigou did offer an important departure from received doctrine."[2]

Pigou's main work, *The Economics of Welfare*, dealt with the problems of maximising social welfare. Elaborating on Marshall's ideas, Pigou, in effect, reviewed the traditional neoclassical theory of equilibrium according to which the formation of costs and incomes under perfect competition ensured maximum welfare for all the members of the society. According to him, this was hampered by two factors: monopoly and external effects (externalities), that is, the positive and, more frequently, the negative effects of the activities of private persons and firms which fail to find a cost evaluation on the market but which could inflict harm on the society as a whole.

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[1] Alfred S. Eichner, "Post-Keynesian Theory: an Introduction", *Challenge*, May-June, 1978, p. 6.

[2] Ben B. Seligman, *Main Currents in Modern Economics. Economic Thought Since 1870*, The Free Press of Glencoe, Glencoe, 1963, p. 478.

The concept of externalities was used by bourgeois economics to reflect—for the first time, even if it did so in a veiled and non-class form—the results of the deep-seated contradictions of capitalist production between private interests, which are motivated by the drive for profit, and the requirements of public regulation of production as determined by its growing socialisation. Pigou first formulated the idea that the externalities should be corrected by the state, which has the task to use taxes and subsidies to adjust and supplement the operation of the market mechanism by improving the structure of the distribution of resources, the social product and consumer demand. On this basis, Pigou formulated the concept of social cost to take into account not only the direct costs, but also the supplemental externalities, although he was, of course, unable to offer any quantitative criteria for such a computation. Apart from regulating the "externalities", Pigou believed that it was necessary to ease social inequality through a state re-distribution of the national income.[1]

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[1] This line of analysis in Pigou's works served as the starting point for a "new economic theory of welfare", whose main idea is the maximisation of social welfare. Today, this theory has attracted much attention in view of the new approach to the purposes of economic growth based on the "quality of life" concept. Ingrid H. Rima, in an article entitled "Neoclassicism and Dissent: 1890-1930", says: "Contemporary interest in social diseconomies or 'externalities' has imparted new vitality to Pigou's perceptions of the 'arrangements of resources' to maximise the national dividend. Contemporary concern with 'smoky chimneys', congested cities, and polluted streams (i.e., with social cost not reflected in market prices) are the modern illustration of Pigou's incisive separation of divergences between private and social product" (*Modern Economic Thought*, Ed. by Sidney Weintraub, University of Pennsylvania Press, 1977, p. 11).

Although Pigou did formulate some important aspects of the theory of government regulation, his works did not have any "revolutionary" impact on bourgeois economics at the time, as did the works of Keynes later. Pigou's theory did not in any sense break with the old school. On unemployment, the most acute political issue in Britain in the 1930s, Pigou remained true to the neoclassical tradition, and his own innovation was his concept of "voluntary unemployment", meaning that unemployment resulted from the workers' unwillingness to work for a "normal", "natural" wage according to the actual balance of supply and demand on the labour market. He asserted: "In stable conditions every one will actually be employed."[1] He rejected the existence of forced unemployment and believed that the only possible way to get rid of it was to lower money wages. When Keynes later sharply criticised neoclassical theory as a whole, he polemicised most strongly with his teacher on that point above all.

The 1920s in Britain were also a period of active formulation of monetary theories and a period in which the quantity theory of money was improved and modified. The so-called Cambridge version of quantity theory, or the "theory of cash balances", was elaborated in the writings of Alfred Marshall, Arthur Pigou, Dennis Robertson, Frederick Lovington and the early works of Keynes.

The gist of the quantity theory of money, the idea that the changing money supply has a direct influence on the level of prices, remained unchanged. The new element introduced by the Cambridge School's economists was that analysis centred on the motives for which cash balances were accumulated by firms and individuals; in other words, the motives for which current income was divided into holdings in cash and its use in other ways. The society's urge to keep a stable part of its incomes in cash was regarded by the Cambridge School's economists as the key condition for the automatic re-establishment of equilibrium in the economic system, provided, of course, there was a flexible price system, a necessary premise of any neoclassical analysis. According to this theory, a rise or fall of prices brings about a change in the real value of the hoarded amounts of money. To keep the latter unchanged, persons will seek to increase the cash part of their incomes and, consequently, to reduce its used part in the event of a growth of prices and, conversely, will reduce the hoarded part and increase the used part in the event of price decline. As a result, the urge to maintain the *real* value of the money part of the income is seen by the Cambridge economists as an automatic regulator re-establishing equilibrium on the commodity market: a growth of prices will reduce consumption, which, for its part, will reduce demand and cause a drop in prices, while a reduction of prices will, conversely, stimulate demand and subsequently result in a rise of prices.[1] The automatism of the economic system triumphs. No wonder then that Keynes made this theory one of the main objectives of his criticism.

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[1] A. C. Pigou, *The Theory of Unemployment*, Macmillan and Co. Ltd., London, 1933, p. 252.

It was the force of circumstances that made economic thought in Britain in the first quarter of the 20th century turn to the problem of the business cycle. However, it was bound by the central idea of the neoclassical school, which held that economic equilibrium tended to be re-established automatically and that there could be no protracted discrepancy between supply and demand, and so it sought to provide an explanation for the business cycle on the basis of phenomena which were external to the "existing" economic system. Just such a theory—the monetary theory of the business cycle—was worked out by Ralph Hawtrey, a well-known contemporary of Keynes's, who assumed that the business cycle was a purely monetary phenomenon determined by the fluctuations of money demand and the corresponding changes in the availability of credit. He believed that in a period of upswing, when money demand tended to grow, the banks further stimulated it by expanding credit, easing the credit terms and lowering the interest rate.

This cumulative enlivenment is expressed in a growth of prices and an accelerated currency of money. As this process unfolds, Hawtrey goes on, the banks begin to display ever greater caution and, fearful of a runaway inflation, sharply increase the interest rate and not only limit but even reduce credit. This provokes a recession, which also becomes cumulative. On the strength of his theory, Hawtrey reached the conclusion that cyclical fluctuations in business activity could be averted or, at least, toned down by means of a rational monetary policy. Let us note that in the 1920s, this theory was widely employed by the governments of the developed capitalist countries (Hawtrey himself was a British Treasury official for many years: from 1904 to 1945). B. Seligman writes: "During the 1920s his banking theories were employed to justify the policies of the Federal Reserve System in the United States. The outlook of the British Treasury was shaped in large measure by Hawtrey; and when it was said that credit expansion was necessary to counteract unemployment and that public works alone were insufficient, it was Hawtrey's views that were being expounded. Not until the later days of the Great Depression was the sole use of monetary measures for moving an economy out of the doldrums seriously questioned. By this time Keynes' theory of income determination had been acknowledged as the more suitable policy guide."[1]

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[1] This was subsequently designated as the "Pigou effect", or the "effect of real cash balances", and is being widely used in present-day neoclassical writings.

2. Keynes's "General Theory"

The crisis of 1929-1933 was the catalyst which completely exposed the profound discrepancy between the orthodox neoclassical notions of the functioning of the capitalist mechanism and the reality. Indeed, it eventually brought on a real crisis in the whole of the neoclassical school, which had to give way—and did so—to a new system of views more appropriate to the tasks of providing an apologia for capitalism in the atmosphere of its general crisis and the growth of state-monopoly tendencies. The foundations of the new system were laid by Keynes, who had studied under Marshall and Pigou, and who later criticised his teachers. He set forth some of his new ideas in various works in the 1930s, with *The General Theory of*

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[1] Ben B. Seligman, Op. cit., p. 512.

Employment, Interest and Money most important of all.

Why was it Keynes who had such a tremendous influence on contemporary bourgeois economics? The reason seems to lie not only in the historical circumstances but also in Keynes's own personality, for his capabilities, interests and inclinations turned out to be consonant with the new requirements of restructuring bourgeois economic thought in the epoch of the general crisis of capitalism and the growth of government regulation; it seems to lie in his interest in the problems of economic policy, an interest which made for his vigorous activity on the level of government and which also made him take a new approach to theoretical matters; it seems to lie in the very structure of his theory, which substantiated the need and methods of government intervention in the economy and which provided the initial impetus for the subsequent evolution of Keynesianism.[1]

John Maynard Keynes (1883-1946) was born at Cambridge into the family of a professor of logic and economic theory at Cambridge University. After graduating from King's College of the University and a period in the Civil Service, he was appointed as one of its lecturers in economics. All the circumstances of his life appeared to favour his becoming an academic economist in the neoclassical tradition. But he opted for another way. At the University, in addition to economics, he also made a fundamental study of mathematics and logic, and this all-round education had an effect on the style of his economic research. But Keynes yearned not only for pure science, but also for practical activity and also for a political career. He became chairman of a major insurance company and the manager of an investment company; he bought the weekly *Nation*, which then took over and merged with the journal *New Statesman*. For many years

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[1] The US economist Alfred S. Eichner, who has analysed the meaning of the "Keynesian revolution", noted that Keynes had been surrounded by highly gifted economists and emphasised that Keynes's prestige was great. "His position at Cambridge, his editorship of *The Economic Journal,* and his service in government combined to give him an audience for any ideas he might put forward that no other contemporary economist could command" (Alfred S. Eichner, Op. cit., p. 6.)

(from 1911 to 1945) Keynes was the editor of *The Economic Journal*, the most important theoretical mouthpiece of British economists. Keynes's reputation as an expert in stock-exchange speculation and a businessman, alongside his academic knowledge, enabled him to rise to the top rung in the world of the financial oligarchy and to become a director of the Bank of England.

Keynes's theoretical studies were closely bound up with his government service and political activity. Upon graduating from the University, he worked for two years at the India Affairs Department of the Treasury, and this activity led to the publication, in 1913, of his first major economic work entitled *Indian Currency and Finance.*

During the First World War, Keynes became an adviser to the Treasury, and as its representative attended the Paris Peace Conference, at which the Peace Treaty of Versailles was signed. He sharply attacked the treaty, which he saw as a threat to the postwar development of capitalism in Europe and in protest even resigned as adviser to the British delegation. He set forth his considerations about the Treaty of Versailles in Europe's postwar development in two articles, which brought him much renown: "The Economic Consequences of the Peace" and "A Revision of the Treaty" (1919). Lenin read these works and wrote: "Keynes has reached the conclusion that after the Peace of Versailles, Europe and the whole world are heading for bankruptcy. He has resigned, and thrown his book in the government's face with the words: 'What you are doing is madness'."[1]

In the 1920s, Keynes gave ever more attention to the currency of money and nurtured the idea of replacing the gold standard with a regulated currency (*A Tract on Money Reform*, 1923). When, at the suggestion of the Chancellor of the Exchequer, Winston Churchill, Britain returned to the gold standard in 1925, Keynes sharply criticised this in a work entitled "The End of Laissez-Faire"(1926).

In November 1929, when the US stock market crash had already heralded the start of a world economic crisis, Keynes became a member of the British government's Committee of Enquiry into Finance and Industry (the Macmillan Committee). Just then he published a solid two-volume work, *A Treatise on Money* (1930), summing up his views of the functioning of the capitalist monetary system. That same year, he was appointed chairman of a government's economic council on unemployment. By then, Keynes already had enough authority to draw attention to his efforts to formulate a new doctrine of economic policy not only among academic circles but also in the governments of the capitalist countries.

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[1] V. I. Lenin, "The Second Congress of the Communist International, July 19-August 7, 1920", *Collected Works*, Vol. 31, 1974, p. 219.

With the outbreak of the Second World War, Keynes, by then commanding tremendous influence and authority, became for the second time an adviser of the Treasury and also a director of the Bank of England. In that period, he wrote on a number of cardinal practical problems facing British imperialism: military finance at the beginning of the war and social security and employment at the end of it. But his most important role in the period was in formulating the postwar principles of international monetary relations which were asserted at Bretton Woods (1944), and which led to the establishment of the International Monetary Fund and the International Bank for Reconstruction and Development (1946).

After the war, Keynes played an important role in negotiations with the US government on the extension of a large loan to Britain. That was the prologue to the US government's Marshall Plan, which was designed to bolster the positions of capitalism in Europe in view of the growing influence of the revolutionary forces on the continent.

Consequently, Keynes' biography was rich in practical political activity, and it was also most important in his re-appraisal of values in *The General Theory of Employment, Interest and Money.*

For more than forty years now, this book has had the unflagging attention of Western economists. It has provided the basis for the emergence of the orthodox version of Keynesianism elaborated by Keynes's followers in Britain (John Hicks) and the United States (Alvin H. Hansen and Paul Samuelson). It was included in all the text-books, while simultaneously becoming the generally accepted basis for the government regulation of the economy, above all, for business cycle policy and the policy of economy growth.

In the 1970s, as I already said in the foreword, this Keynesian version and, with it, Keynes himself were sharply criticised by economists of diverse schools. But there was also a growing movement to "rehabilitate" Keynes and his theoretical analysis, and to give a "new reading" to *The General Theory*, so as to develop it on the basis of a somewhat different theoretical conception which was ostensibly more in accord with the purport and spirit of his work. Keynes's supporters insist that his theory and orthodox Keynesianism are not the same thing. I shall deal with these discussions and arguments below, but my concern at this point is somewhat different. When re-reading and re-thinking *The General Theory of Employment, Interest and Money* in the light of the new discussions, I want to bring out those of its elements which provided the basis for the formulation of the orthodox version (I must say that that is precisely the aspect of the theory which is dealt with in most Soviet writings containing a critical analysis of Keynes's theory, including my own), and also the elements that were ignored both by that version and in our own writings.

Let me emphasise that Keynes's book does not make for light reading in any sense. It is neither a text-book nor a complete and consistently elaborated system. It is above all a study which runs both along the horizontal (criticism of various postulates of the neoclassical theory, formulation of the author's own approaches to the analysis of the economic problems, excursions into remoter history of economic thought, consideration of non-traditional economists, etc.), and also along the vertical, as the author, having formulated the starting point of the simplified model, then goes on to a review of these simplifications, introducing new and complexifying elements of analysis which markedly alter the initial model. In view of all this the following assumption can well be made: the orthodox version of Keynesianism is based on the simplified Keynesian models described in the first chapters of the work.

Meanwhile, the contemporary advocates of Keynesianism lay stress on the chapters in Keynes's work in which he goes on to analyse more complex phenomena and which were very frequently ignored by his followers and interpreters.

Let us now make a consistent examination of the system of Keynes's views. What was the main element that distinguished the Keynesian approach to the analysis of the economic phenomena from the neoclassical one?

First of all, in contrast to the neoclassicists, Keynes reached the conclusion that the solution of all the vital problems of the highly developed capitalist society would not be found on the side of *supply* but on the side of *demand* which ensures the realisation. Keynes criticised Say's law of markets, according to which supply automatically generated demand, and brought to the fore the problem of "effective demand" and its components—consumption and accumulation—and also the problem of factors which determine the movement of these components.

This new approach was most forcefully brought out with respect to savings. The whole of earlier bourgeois economics had argued that thrift, abstinence from consumption, was the basis of capitalist economic growth.

Keynes refuted this notion and accentuated the fact that "not only may thrift exist without enterprise, but as soon as thrift gets ahead of enterprise, it positively discourages the recovery of enterprise and sets up a vicious circle by its adverse effect on profits".[1]

The switch of emphasis on the problem of demand formation for the realisation of the product had a great impact on the subsequent development of bourgeois economics.

Organically connected with this central idea of Keynes's theory is his macroeconomic method of analysis, that is, an analysis of the relationships between the broad economic aggregates: national income, capital savings, investment, consumption, and so on.

Before Keynes came on the scene, the microeconomic approach had prevailed. The prosperity of an individual firm was, in effect, identified with the conditions of growth and prosperity of the nation as a whole, with the growth of the national wealth. That is why analysis centred on the individual firm, on the problem of minimising its costs and maximising its profits, as the source of capital saving. Macroeconomics implies that the conditions for the prosperity of the individual firm are not at all identical with those for the prosperity of the economy as a whole. Contradictions may arise between the two, and the resolution of these will not be found in a maximisation of individual firm profits, but in a re-establishment of national economic proportions and improvement of the general conditions of reproduction.

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[1] J. M. Keynes, *A Treatise on Money*, Vol. II, Macmillan and Co. Ltd., London, 1930, pp. 148-49.

Keynes began his analysis with the problem of employment, because in that period unemployment had acquired proportions that were disastrous for capitalism. He wrote: "It is in determining the volume, not the direction, of actual employment that the existing system has broken down."[1]

According to neoclassical theory, employment depended on two factors: the marginal productivity of labour (which determined the demand for labour) and the "marginal stress of labour" assessed by the workers through their real wages (which determined the supply of labour). It was the intersection of these two graphs that allegedly established the level of employment. The lower the real wages workers will accept, the higher the level of employment, and vice versa. This conception, for its part, was based on two postulates. First, that the supply of labour responded precisely to the supply of *real wages.* Second, that the movement of real wages was identical with the changes in nominal wages, which is why every agreement on money-wages determined their real level.

From this followed the basic conclusion of neoclassical theory: the level of employment was "in the hands" of the workers themselves. By accepting lower real wages, they helped to reduce unemployment. An unwillingness to accept lower wages worked against them through growing unemployment.

[1] J. M. Keynes, *The General Theory of Employment, Interest and Money*, Macmillan and Co. Ltd., London, 1957, p. 379.

Keynes rejected both these neoclassical postulates. He asserted that the size and change of unemployment did not depend on the workers' behaviour: "A willingness on the part of labour to accept lower money-wages is not necessarily a remedy for unemployment."[1]

According to Keynes, the level of employment was determined by the dynamic of effective demand, which consisted of expected expenditures on consumption and proposed investments. That is why, Keynes emphasised, the level of employment and national income was not determined by the supply of resources and changes in their prices but by effective demand.

The attempt to determine the uniformities governing the dynamic of "effective demand" and national-income growth is central to Keynesianism, and it was this idea that was the real novelty for bourgeois economics. The well-known US economist Paul Samuelson wrote the following about Keynes's analysis of demand and national income: "Today the broad fundamentals of the 'new economics' are increasingly accepted by most economists including, it is important to notice, many who do not share Keynes' particular policy views and who differ on technical details of analysis."[2]

According to Keynes, effective demand consists of two components: consumption and investment. Only when these two are in definite correspondence with each other and have reached the necessary level, can the state of full employment ensue.

Let us consider in greater detail the Keynesian analysis of factors which determine the dynamic of both components: personal consumption and investment.

Having analysed a great many objective and subjective factors which influence personal consumption, Keynes reached the conclusion that only a change in real income had an effect on the volume of consumption.

Keynes believed that the personal consumption increment was a constant function of the income increment, and the form of this functional dependence led him to the conclusion that consumption tended to grow but not in the same proportion as did income. As a result, the share of consumption in income tended to contract. This dynamic of consumption was connected by Keynes with "the fundamental psychological law" of society, a law which he did not derive from social-class relations under capitalism, but from the human mentality, which ostensibly induced man to consume less and save more as his income increased.

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[1] Ibid., p. 18.

[2] Paul A. Samuelson, *Economics*, 8th Edition, McGrow Hill, New York, 1970, p. 193.

But from this it followed that in order to maintain continuous national income growth, there was a need to increase investment designed to absorb the expanding volume of savings. The richer a society, the more acute this problem, because the greater the amount of the national income it had to invest.

Keynes attached the prime importance to the investment component of effective demand in determining the level of national income and employment. He wrote: "It follows, therefore, that, given what we shall call the community's propensity to consume, the equilibrium level of employment, i.e., the level at which there is no inducement to employers as a whole either to expand or to contract employment, will depend on the amount of current investment."[1]

Here we come to the central element of Keynes's theory (at any rate, to that element which was most elaborated in the 1950s and 1960s and on which the "orthodox" Keynesian model is based), namely, the establishment of the connection between investment, consumption and national income. This connection was followed through the multiplier concept, according to which there is a definite and constant correlation between investment and the increase in the national income, because every outlay on investment (or any other autonomous expenditure) is converted into primary income, a part of which is then expended to become secondary income, tertiary income, and so on. Both employment and production are simultaneously expanded. The duration, the overall effect of the multiplier process, like the magnitude of the multiplier itself, depend on the proportion in which income is divided into a consumed and a saved part. The larger the share of the consumed income, the greater the income generated by the initially invested amount of money and the longer the multiplier process.

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[1] J. M. Keynes, *The General Theory...*, p. 27.

If A is the initial increment of income (equal to the increment of investment) and r the consumed share of that increment, or the marginal propensity to consume, we have the following series expressing the aggregate circuit of incomes:

$$A + rA + r^2A + r^3A + \ldots = A \frac{1}{1 - r}$$

(in accordance with the formula for infinite geometric series), i.e., $\Delta Y = A \frac{1}{1 - r}$, where ΔY is the national-income increment, A—the investment increment, and $\frac{1}{1 - r}$ – the magnitude of the multiplier expressed through the "marginal propensity to consume". The higher this propensity to consume, the larger the multiplier and vice versa. This is a point that needs to be specifically noted. The multiplier concept does not consist merely in indicating the existence of a correlation between investment growth and national income growth. Its specific feature is that the correlation is regarded as a constant magnitude determined by the constant *share of consumption* in national-income increment.

Consequently, Keynes's multiplier theory linked up the increase in national income with the increase in consumption caused by investment (or government expenditures). As I intend to show below, this multiplier model, supplemented with a feedback connection between income and investment, has become a component part of all the neo-Keynesian models of the cycle. In these models, investment was a function of national-income increment, with the whole process seen in real terms, that is, on the strength of constant prices.

The question arises of how these problems are actually treated in Keynes's work, especially since they have now drawn the attention of contemporary followers of his theory.

First, what is the meaning of Keynes's investment theory, as set forth in *The General Theory*? Let me emphasise that it is not so much macroeconomic as microeconomic, because he does not connect investment with the dynamic of the national income and effective demand, but with marginal efficiency of investment which characterises the expected return on investment. Keynes holds that the magnitude of investment depends on the correlation of two factors: the marginal efficiency of investment, or the expected return on current investment, and the interest rate. Keynes makes a point of emphasising that the marginal efficiency of investment is not determined by current profit but depends above all on the assessment of future profits, something that makes it extremely sensitive to all manner of speculation, panic, re-appraisal of the market outlook, technical revolutions, and so on. In this way, he connected the problem of employment and the national-income level in fact with the actual capitalist conditions in which the movement of the key national-economic indicators depends on the behaviour of entrepreneurs and on their expectation of future profits.

It is not surprising that this aspect of Keynes's theory has attracted most attention today, when the investment process in the industrial capitalist countries has sharply slowed down, and when most economists connect this slowdown with the greater risks and the state of uncertainty which tend to lower the marginal efficiency of investment and which, for that reason, reduce the incentives to new (especially long-term) investment.

In Keynes's theory, the rate of interest is the lowest limit of the marginal efficiency of investment, the limit which is determined by the actually existing conditions. Today's interest rate determines for the entrepreneur the bottom line for his future investment. The lower the interest rate, the farther that limit is pushed back, and conversely, a rigid interest rate or even its growth should retard, or reduce the propensity to invest.

On what does the interest rate depend? The neoclassicists assumed that the interest rate was established through the interaction and equalisation of savings and investments. The equilibrium interest rate was established when savings and investments were equalised. Keynes came forward with a totally different explanation of interest. In his theory, interest is an autonomous factor and its level is determined by the interaction of supply and demand for money balances (i.e., not for all the savings, but only for their *money part*). Keynes regarded interest as a purely monetary phenomenon reflecting the play of market forces on the money market. According to his theory, an increase of money demand as compared with money supply was the main cause capable of producing an undesirable increase or rigidity of the interest rate. But what determined the desire to hold money rather than other forms of wealth (stocks or bonds), or liquidity-preference, as Keynes called it? Liquidity-preference, he believed, was determined by three motives: the transaction motive, or common desire to have a supply of money available to carry out everyday transactions; the precautionary motive or the need to keep a cash reserve for emergencies; and the speculative motive which directly determines the unforeseen changes in the liquidity-preference and which has an effect on the movement of interest rate.

According to Keynes's theory, interest rate is a peculiar payment for the need to give up cash "liquidity". That is why, the greater liquidity-preference, which is increased by the uncertainties on the money markets, the greater the demand for cash and the higher the interest rate. For Keynes, interest was a purely psychological phenomenon. At the same time, it was an element of the economic system, which in Keynes's theory connected the monetary sphere with the real categories of reproduction and which determined the specific impact of monetary policy on the course of capitalist reproduction.

From this theory it follows that monetary policy and the changing volume of money supply had an influence on reproduction only through its influence on the investment process and only if that was capable of changing the psychological climate on the money market by reducing interest rate. If an increase in money supply did not lead to lower interest rate (the so-called "liquidity trap"), monetary policy was unable to carry the capitalist economy out of its impasse.

I have emphasised this aspect, first, in order to understand why Keynes and his followers gave preference to fiscal policy; and second, to give the reader a clearer understanding of the subsequent debates (notably, those between Keynesians and monetarists) over the impact of monetary policy on capitalist reproduction.

The next question that needs to be considered in greater detail is that of prices and inflation in Keynes's theory. Did he, indeed, postulate such a strict invariability of prices as the subsequent simplified Keynesian models adopted? The point is that in his simplified model of effective demand, Keynes does imply that prices do not change (in the short term, at any rate) assuming that the economy responds to the change in money demand by a growth (decline) in output and employment, and not by a growth (decline) in prices. As the simplified model approximated to reality, he tried to include into it the effect of changing prices. In Book V, "Money-Wages and Prices", he emphasised that an increase in money demand would be spread in a definite proportion between the growth of employment and the growth of prices. "The extent to which prices (in terms of wage-units) will rise, i.e., the extent to which real wages will fall, when money expenditure is increased, depends, therefore, on the elasticity of output in response to expenditure in terms of wage-units. Effective demand spends itself, partly in affecting output and partly in affecting price, according to this law."[1]

When considering Keynes' attitude to inflation, we usually quote an extract, which is justified, as he himself emphasised, only in certain extremely simplified conditions: "So long as there is unemployment, employment will change in the same proportion as the quantity of money; and when there is full employment, prices will change in the same proportion as the quantity of money."[2] But, Keynes added, if a number of simplifying assumptions were ignored, the situation looked somewhat different. First, effective demand, even in the presence of unemployment, did not change in exact proportion to the change in the money supply. Its dynamic would be determined by a combination of three elements: "a) the schedule of liquidity-preference which tells us by how much the rate of interest will have to fall in order that the new money may be absorbed by willing holders, b) the schedule of marginal efficiencies which tells us by how much a given fall in the rate of interest will increase investment, and c) the investment multiplier which tells us by how much a given increase in investment will increase effective demand as a whole."[1]

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[1] J. M. Keynes, *The General Theory...*, pp. 284-85.
[2] Ibid., p. 296.

That is not all. The second point is that with the growing employment of resources, their effectiveness would decrease, and the costs increase; third, the elasticity of producing various goods was different, so that the supply of some of these would prove to be inelastic even before the full employment of resources was reached; fourth, money-wages would reveal a tendency to growth even before the full employment of resources was arrived at; fifth, the wages of various categories of workers would not change in the same proportion. "Thus instead of constant prices in conditions of unemployment, and of prices rising in proportion to the quantity of money in conditions of full employment, we have in fact a condition of prices rising gradually as employment increases."[2]

Keynes believed that the price theory, i.e., the analysis of relations between the changes in the quantity of money and changes in the level of prices should examine the impact of all these complicating factors.

Thus, in going over to his complexified model, Keynes reached the conclusion that any increase in money supply would, in effect, be spread between rising prices, growing money-wages and growing output and employment. Accordingly, he drew a distinction between the state of so-called absolute (true) inflation (developing when effective demand grew in conditions of full employment) and so-called semi-inflation, when prices could grow in response to an increase in effective demand even before the onset of full employment. "Thus, in addition to the final critical point of full employment at which money-wages have to rise, in response to an increasing effective demand in terms of money, fully in proportion to the rise in the prices of wage-goods, we have a succession of earlier semi-critical points at which an increasing effective demand tends to raise money-wages though not fully in proportion to the rise in the price of wage-goods."[1]

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[1] Ibid., p. 298.
[2] Ibid., p. 296.

From the standpoint of long-term development, Keynes also assumed that there was a long-term tendency for prices to rise: "The very long-run course of prices has almost always been upward. For when money is relatively abundant, the wage-unit rises; and when money is relatively scarce, some means is found to increase the effective quantity of money."[2] The stability or instability of prices in the long term depends on the upward trend of the wage-unit as compared with the growth of effective demand.

One could, therefore, reach the conclusion that Keynes's work contained the fundamentals of the theory of cost-push inflation, that is, a growth of prices connected with an increase in money-wages, which originated even before the point of full employment. This explains Keynes's urge to measure effective demand in terms of wage-units, so as to separate its actual effect from the monetary effect (a fact emphasised by many present-day post-Keynesians).

Keynes examined in great detail how a reduction in money-wages would influence effective demand. The neoclassical theory puts it straight: a reduction in money-wages depressed prices, and this automatically expanded demand and employment. That is why the main remedy for unemployment was lower wages.

Keynes took a different approach. He conceded that such an effect would occur if the reduction in wages did not change the volume of aggregate effective demand (measured in wage-units). "The precise question at issue is whether the reduction in money-wages will or will not be accompanied by the same aggregate effective demand as before measured in money, or, at any rate, by an aggregate effective demand which is not reduced in full proportion to the reduction in money-wages (i.e., which is somewhat greater measured in wage-units)."[3]

A fall in money wages, he held, could expand effective demand only and to the extent to which it affected the three parameters of effective demand: propensity to consume, marginal efficiency of capital or interest rate.

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[1] J. M. Keynes, *The General Theory...*, p. 301.
[2] Ibid., p. 307.
[3] Ibid., pp. 259-60.

He examined, in succession, the response of each of these parameters to a reduction in money-wages to reach the conclusion that a lowering of wages could increase effective demand only on the basis of a lowering of interest rate (in consequence of the increase in money supply in terms of wage-units). But in that case, the effect of such a reduction was equivalent to bank policy in increasing money supply (through operations on the open market). That being so, why reduce wages, when that entails tremendous social difficulties and when the same result could be obtained by means of the bank policy of increasing money supply? From this Keynes drew the conclusion that it was preferable to keep the level of money-wages stable.

Accordingly, Keynes also considered an increase in money-wages not only from the standpoint of how that affected prices, but also the impact it would have on effective demand.

What were the practical conclusions that followed from this conception? Keynes himself wrote: "Our final task might be to select those variables which can be deliberately controlled or managed by central authority in the kind of system in which we actually live."[1]

The first and main conclusion was that what had to be controlled was effective demand, primarily investment, its key component from the standpoint of capitalist production and the interests of entrepreneurs.

Why was it that Keynes and his followers (with the exception of the left-wing Keynesians) attached crucial importance to investment, instead of consumption, the second component, in controlling effective demand? The answer is provided by Keynes's theory itself and, of course, by his class stand for the interests of capital in the first place.

Assuming the function of consumption to be stable, he switched all attention to ensuring, with the help of the governments an equally stable increase in investment whose dynamic depended on how high and reliable the future increase in profit turned out to be.

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[1] Ibid., p. 247.

It is true that he has several remarks that it would be possible to increase effective demand also by increasing consumption.

"I should readily concede that the wisest course is to advance on both fronts at once. Whilst aiming at a socially controlled rate of investment with a view to a progressive decline in the marginal efficiency of capital, I should support at the same time all sorts of policies for increasing the propensity to consume... There is room, therefore, for both policies to operate together—to promote investment and, at the same time, to promote consumption..."[1]

But Keynes assumed that it made sense to stimulate consumption only after the stage of investment saturation was attained. He made a point of considering the conceptions of underconsumption, and wrote: "Practically I only differ from these schools of thought in thinking that they may lay a little too much emphasis on increased consumption at a time when there is still much social advantage to be obtained from increased investment. Theoretically, however, they are open to the criticism of neglecting the fact that there are two ways to expand output. Even if we were to decide that it would be better to increase capital more slowly and to concentrate effort on increasing consumption, we must decide this with open eyes after well considering the alternative. I am myself impressed by the great social advantages of increasing the stock of capital until it ceases to be obscure. But this is a practical judgement, not a theoretical imperative."[2] Those are the ideas, as I have said, that were widely used by the left-wing Keynesians as the fundamentals for their theoretical constructs, and by the extreme right-wing reactionary anti-Keynesians, who accused Keynes of "socialism", "Marxism", and so on.

Keynes's book also contains the main ideas concerning the methods that could be used to regulate effective demand. He considered two instruments for the regulation of demand: monetary policy and fiscal policy.

The possibility of monetary policy, as we have seen, followed directly from his theory of interest. He believed that interest was a most important parameter on which the marginal efficiency of capital depended, and regarded it as a purely monetary phenomenon, assuming that the interest rate could be manipulated on the money market by means of state intervention over a long term. Keynes highly favoured this indirect form of state intervention. However, practice showed that monetary policy was ineffective, especially in conditions of a depression, when investment responds little or not at all to a lowering of interest rate. That was the situation which took shape in the 1930s (incidentally, many postwar statistical studies failed to discover the existence of any close connection between interest rate and investment, and this also tended to reduce confidence in monetary policy).

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[1] Ibid., p. 325.
[2] Ibid.

Keynes analysed the nature of the cycle and reached the conclusion that monetary policy was absolutely ineffective as an instrument for overcoming crises. On the basis of his belief that the cycle was connected with sudden changes in the marginal efficiency of capital and assuming that the latter, in conditions of uncertainty, was determined above all by expectations of future returns on capital he drew the conclusion that the main way to combat the crisis was to restore confidence. But it was impossible to restore confidence only by lowering interest rate. "With markets organised and influenced as they are at present, the market estimation on the marginal efficiency of capital may suffer such enormously wide fluctuations that it cannot be sufficiently offset by corresponding fluctuations in the rate of interest. ...I conclude that the duty of ordering the current volume of investment cannot safely be left in private hands."[1]

That is why Keynes believed fiscal policy, including government spending, to be the key instrument of regulation. "For my own part I am now somewhat sceptical of the success of a merely monetary policy directed toward influencing the rate of interest. I expect to see the State, which is in a position to calculate the marginal efficiency of capital-goods on long views and on the basis of the general social advantage, taking an ever greater responsibility for directly organising investment."[1]

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[1] J. M. Keynes, *The General Theory...*, p. 320.

Elsewhere he writes: "I conceive, therefore, that a somewhat comprehensive socialisation of investment will prove the only means of securing an approximation to full employment; though this need not exclude all manner of compromises and of devices by which public authority will co-operate with private initiative."[2]

Keynes was not, of course, an advocate of such forms of direct "socialisation of investment" as state property: "It is not the ownership of the instruments of production which it is important for the State to assume. If the State is able to determine the aggregate amount of resources devoted to augmenting the instruments and the basic rate of reward to those who own them, it will have accomplished all that is necessary."[3]

I draw attention to this statement, rather to its concluding part, because it contains an idea which has up to now been somewhat ignored. It suggests that he believed not only the volume of resources required to augment investment, but also the "basic rate of reward to those who own them" to be the key objectives of capitalist economic regulation. In other words, in his book, Keynes came close to the basic idea of the incomes policy on which the present-day post-Keynesians rely.

Consequently, Keynes's theory provided bourgeois economics with a new set of theoretical instruments for analysing the problems of capitalist reproduction. But such an analysis on the basis of Keynesian theory would be impossible if it did not reflect the sharpening contradictions of monopoly capitalism that had made its growth into state-monopoly capitalism inevitable. The Keynesian theory of reproduction is based on the assumption of the existence of monopoly capitalism. While Keynes made no mention at all either of monopoly or its influence on the process of reproduction, the whole of his theory is based on a recognition of one of the most important consequences of the domination of monopoly relations, namely, the disappearance of the price flexibility and mobility which were proper to laissez-faire capitalism.

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[1] Ibid., p. 164.
[2] Ibid., p. 378.
[3] Ibid.

His theory also reflects another important factor which has become an essential economic feature of present-day capitalism, namely, the growing strength of the unionised working class, which is an important obstacle to the spontaneous market-induced fluctuation of wages.

The second highly important assumption in his theory is a recognition of the fact that contemporary capitalism tends to exacerbate to an extreme the contradiction between production and consumption, and of the primary importance of the problem of realisation. That is why Keynes centred his analysis on the theory of effective demand as the basic factor which determined the national income and employment level.

Keynesian theory also bore the marks of the specific conditions of the 1930s. Although in contrast to many Western critics, we are not inclined to regard his theory only as a "depression economy theory" (that is, one which is relevant only to the conditions of a deep economic depression), it must be emphasised, nevertheless, that his theory did, of course, carry the imprint of the 1930s. Nor could it have been otherwise. It was also expressed in his exaggerating the importance of the conditions of realisation, his underestimating the exogenous incentives to investments, and in his sharply negative attitude to thrift and underestimation of price growth. He assumed that the economy was inclined to overaccumulate capital and underemploy manpower. At the same time, it is this that made Keynes draw the sound conclusion that the policies he advocated were the only way of salvaging capitalism. "Whilst, therefore, the enlargement of the functions of government, involved in the task of adjusting to one another the propensity to consume and the inducement to invest, would seem to a nineteenth-century publicist or to a contemporary American financier to be a terrific encroachment on individualism, I defend it, on the contrary, both as the only practicable means of avoiding the destruction of existing economic forms in their entirety and as the condition of the successful functioning of individual initiative."[1]

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[1] Ibid., p. 380.

The recognition of the inevitability of state intervention as the only means for adapting capitalist relations of production to the growing socialisation of production testifies to Keynes's foresight. What he failed to anticipate, however, is that state intervention would, for its part, generate a series of contradictory effects setting objective limits to the state regulation of the economy, a fact amply demonstrated in the 1970s.

CHAPTER TWO

THE KEYNESIAN THEORY OF THE BUSINESS CYCLE

1. The Formation of the Orthodox Keynesian Model

Keynes's theory caused a stormy reaction among bourgeois economists and at once won as many admirers as adversaries. Expressing, as it did, the tendency towards a growth of state-monopoly capitalism, it provided the substantiation for the state regulation of the economy even when this was being done by those who did not in any sense regard them as being followers of Keynes's. Its subsequent development involved both an elaboration of theoretical principles and of concrete programmes for economic control. One economist says: "Throughout the 'General Theory', Keynes had merely presented a skeleton. It remained largely for others to add blood and flesh, and this process continues at an accelerated pace even today. Without these contributions, the influence of the 'General Theory' could have been considerably less."[1]

A most important feature of the postwar development of Keynesianism was the adaptation of the theory to the new conditions of a growing capitalist economy. In the postwar period, the capitalist economy, especially in countries which had suffered the ravages of war, was on the upswing, in an atmosphere of price growth and inflation. In those conditions, the main problem was not so much demand as accumulation of resources for capital investment (savings). At the same time, the upswing was extremely erratic, being punctuated with recessions, especially frequent in the US economy.

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[1] Seymour E. Harris, *John Maynard Keynes: Economist and Policy Maker*, Charles Scribner's Sons, New York, London, 1955, p. 207.

Accordingly, Keynes's followers set themselves the task of producing a more general theory to back up economic control in varying market conditions, both in time of recession and in time of growth. Keynes's theory proved to be a necessary instrument for analysing not only a depressive economy, but also a booming capitalist economy. That is why bourgeois economists used Keynesian economic theory in an effort to tackle the new problems produced by economic growth. Keynes's theory began to develop into the Keynesian (or neo-Keynesian) theory of economic growth in the broad sense of the word, blending a dynamic theory of cycles and a theory of economic growth.

The problem of cycles and crises appeared in bourgeois economics long before Keynes's time, but it did not effectively have a footing in the theories which constituted the foundation of the dominant neoclassical school. Most economists before Keynes proceeded from Say's law of markets, assuming that disruptions of the equilibrium between supply and demand in the capitalist economy could be no more than temporary and accidental. Under free competition and in the absence of intervention by the state, it was the price mechanism that was to restore the disrupted equilibrium. They held that this mechanism operated in three markets: the commodity market, the labour market and the money market. Equilibrium on the commodity market was restored by means of higher or lower prices, with money supply remaining constant. If prices did not fall in the event of an increase of the supply of commodities, the equilibrium could be restored through a corresponding increase in money supply.

In the event of a change in the correlation between consumption and savings and a growth in the share of savings, there would be no obstacles to their conversion into investments because the interest rate would drop. The lower interest rate, on the one hand, would tend to reduce the share of investment, and on the other, increase the propensity to invest, so that supply and demand would eventually be balanced out.

They claimed that the same automatic balancing-out would occur on the labour market. If production grew faster than labour supply, the result would be a growth of wages. The latter, for its part, would, on the one hand, slow down the rate of output growth, and on the other, stimulate labour supply. Conversely, if output dropped and unemployment emerged, real wages would tend to fall. That would reduce the supply of labour, while increasing the demand for it, so that full employment would eventually be restored.

Pre-Keynesian bourgeois theories of crises were elaborated mainly as theories of externalities to which the economy responded in consequence of the lag of some responses in a fluctuating or "web-like" manner. Such externalities were discerned within the monetary system, in the mentality of entrepreneurs, in the peculiarities of technical progress (Schumpeter's "bursts of innovations"), and so on. As a rule these theories described the specific or derivative causes of crises, never going to the basic contradictions of capitalist reproduction.

Many bourgeois economists now admit that it was Marx who first gave a comprehensive analysis of cycles as a form of movement of capitalist production. The US economist Howard J. Sherman, for instance, remarked that "Karl Marx had long before described the business cycle as an inherent part of capitalist growth, had attacked Say's law, and had foreshadowed elements of every theory that was later to be popular."[1]

The 1929-1933 crisis, the greatest in the history of capitalism, forced economists to give closer attention to the problem of cycles. An important step in analysing the cycle mechanism was taken by bourgeois economists who drew attention to the technico-economic features of the process of capital accumulation as the material basis of the cycle. But it was Keynes who paved the way for the elaboration of a theory of business cycles and economic crises which was to become a component part of the generally accepted theory of the functioning of the capitalist economy and the basis for its government regulation.

In *The General Theory of Employment, Interest and*

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[1] Howard J. Sherman, *Macrodynamic Economics. Growth, Employment and Prices*, Appleton-Century-Crofts, New York, 1964, p. 61.

Money, Keynes does not deal with the problem of the cycle as such.[1] But, as I have shown, he put forward some important ideas which, he believed, determined the causes of crises, namely, a decline in the marginal efficiency of investment, that is, a drop in the expected rate of return as compared with the current interest rate.

He held that the declining marginal efficiency of investment was connected with the uncertainty which reigned on the money markets—above all on the securities markets—and which could cause a sudden spread of panic, pessimism and loss of faith in the future under the impact of various objective and even subjective causes.

Consequently, Keynes stressed the importance of monetary factors and the role of financial instability, that is, ultimately the anarchic nature of the capitalist mode of production, although neither he nor his followers saw the connection between its anarchic nature and the deeply rooted contradictions of capitalism, and in order to describe the phenomenon itself used the neutral term "uncertainty principle".[2]

But in the subsequent elaboration of the Keynesian theory of cycles, this line of analysis was abandoned and efforts were made to correct and extend Keynes's theory of effective demand, which made it possible to base the theory of cycles on the interaction of so-called real macroeconomic components which determined the process of reproduction as a whole, i.e., aggregate incomes, expenditures, savings and consumption, as a rule, expressed in constant prices. This theory provided the basis for the elaboration of a series of mathematical models of the business cycle. These models reflected some essential interconnections within the mechanism of reproduction, while being out of touch with such key aspects determining the cyclical nature of capitalist reproduction as the impact on it of monetary and financial structures. It was this circumstance that subsequently drew especially sharp criticism of the Keynesian theory of cycles from economists of various schools, including the followers of Keynes itself.

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[1] The US economist Lloyd A. Metzler remarked in this context: "It is not surprising, therefore, that his contribution to the theory of business fluctuations consisted more in the stimulus which he gave to the work of other economists than in his own direct contribution" (*The New Economics.* Edited with Introductions by Seymour E. Harris, Dennis Dosson Ltd., London, 1947, p. 437).

The British economist John R. Hicks said that Keynesian theory, in spite of all that it had done for an understanding of business fluctuations, undoubtedly left without explanation at least one important question, namely, the question of the business cycle itself (John R. Hicks, *A Contribution to the Theory of the Trade Cycle*, Clarendon Press, Oxford, 1950, p. 1).

[2] It should be emphasised that present-day critics of orthodox Keynesianism note the especial importance of the introduction into analysis of the uncertainty principle (and it is not Keynes but the Swedish economist Gunnar Myrdal that is credited with having done so). The fact that in its subsequent development orthodox Keynesianism failed to realise this principle was, they claim, a most important reason for the incompleteness of the so-called "Keynesian revolution".

Consequently, the Keynesian theory of cycles, emerging on the basis of Keynes's ideas, developed more or less independently. Some lines of Keynesian analysis proper turned out to be elaborated to a greater extent (dynamic of effective demand, multiplier), while others were less so (role of money, interest rate).

As a result of this evolution, it turned out that another concept of the cycle could also be worked out on the strength of Keynes's writings (including those which preceded *The General Theory*). Leaving the more detailed examination of the paradoxes in the evolution of Keynesianism, let us now consider the development and main features of the traditional Keynesian theory of the cycle.

What did the Keynesians add to the analysis of this problem in the 1950s and 1960s?

First, they switched the emphasis in theoretical analysis from the problem of crisis as such to the broader problem of cycles in general. This resulted from their recognition of the fact that crises were an inevitable concomitant of capitalist economic development, and that capitalism was threatened not only by crises but also by overheating, with inevitable inflationary trends paving the way for the crisis.

The Keynesians do not regard crises either as accidental or the result of mistakes in economic policy, or even of monetary difficulties. They hold that cyclical fluctuations are organic to capitalist production.

Second, the Keynesians tried to tie in their cycle concept with the theory of long-term deviations (trends) in capitalist economic development which determine the duration and depth of the various phases of the cycle in different historical conditions.

Third, characteristically, they looked for the causes of instability and cyclical fluctuations in the peculiarities of reproduction relations, and not in any external upheavals of the economic system or in price changes. They believed that the main problem was the change in effective demand which determined the movement of actual production and its deviations from the potential level. They attached special importance to what they called the "switches" of the economic system that determined the "turning point" at which either a recession or excessive growth was generated. They had probed their way to an analysis of some of the essential interconnections of capitalist production which produced the capitalist cycle mechanism. But in most instances, they took superficial and purely formal relations for their structural elements. Outwardly impressive models illustrating the fluctuation process appeared to be such not because they contained as their premises relations characterising the inherent contradictions of capitalist production, but only because they were based on lagging economic responses (any lag-based model inevitably produces fluctuations).

Fourth, it was the orthodox Keynesians who worked out the principles of government business cycle policy designed to smooth out the fluctuations in economic activity by controlling effective demand, a policy whose flaws were exposed in the inflationary atmosphere of the 1970s.

Keynesian analysis of the cycle is based on the income determination theory, which in the formulation of a problem differed both from the classical and from the neoclassical national income theory.

Classical bourgeois political economy considered above all the sources of the national income and linked up the problem with the labour theory of value. Neoclassical theory, considering essentially the same problem, countered the classical standpoint with the vulgar apologetic concept of factors of production: it claimed that the volume and the component parts of the national income were determined by the share of the three factors—land, capital and labour.

At the same time, the neoclassicists assumed that conditions for the production of the national income automatically also ensured the conditions for its realisation ("output produces demand"), without causing any contradiction between the two.

Keynes took another problem—that of determining the national income level—as the central one. The latter did not deal with sources but with the factors which determined the real level and real dynamic of the national income. These factors lay on the side of investment demand and consumer demand—and in turn determined the conditions for the realisation of the gross product. According to Keynesian theory, it was the specific dynamic of effective demand determined by the interaction of investment, consumption and national income, that constituted the basis of the business cycle.

The Keynesian theory of cycles (like the models which emerged on its basis) includes four main components: a notion of the factors which determine investment demand (investment function); the factors which determine consumer demand (consumption function); and also the concepts of multiplier and accelerator by means of which investment and consumption are tied in with the movement of the national income.

Let us consider each of these components.

Despite the differences in detail, the investment functions introduced in Keynesian models, as a rule, start from the division of all investments into derivative, or induced investments, and autonomous investments. This division into two component parts is determined by the difference between the factors which determine the movement of each of these. The dynamic of derivative, or induced, investments is usually connected with endogenous factors of the economic system. Their increase (or decrease) are due to changes in the volume of the national income or consumer demand.

The dynamic of autonomous investment is determined by exogenous factors. Autonomous investment can be triggered by technical progress, technical breakthroughs, population growth, government policy and so on. This also includes investment caused by replacement of fixed capital. It is extremely hard to identify the two types of investment statistically, but in theoretical models they are used to emphasise the specific features of the movement of various types of investment, the extent to which they do or do not depend on the dynamic of effective demand, the limits of the relatively independent development of production of the capital goods from the movement of effective demand at various stages and in various historical conditions of development.

The dynamic of personal consumption has an important role to play in the Keynesian conception. The consumption functions and the investment functions introduced into Keynesian models differ in detail, but they all spring from the consumption function proposed by Keynes. Let us recall that he connected the dynamic of personal consumption with the "fundamental psychological law", according to which the rise in consumption is less than the rise in income. Since only a part and not the whole of the income increment is spent (the propensity to consume is less than unity), the average share of consumption in the national income, according to this law, tends gradually to shrink. With such an interpretation, the real consumption expenditures is a stable function of the real income. The consumption function subsequently assumed a somewhat more complicated form. An effort was made to bring out in consumption—as in investment earlier on—an autonomous part not connected with income growth and determined by the habitual standard of consumption. With such premises, only a part of the increment in consumption expenditures was functionally connected with changes in income, while the overall dynamic of consumer demand could prove to be different from that assumed by Keynes.

The next element of the Keynesian theory of cycles was the multiplier, which connects the dynamic of investment with the national-income dynamic, which, for its part, determines the dynamic of consumption.

The Keynesians believe that there is a stable connection between an increase in investment and an increase in the national income. From the standpoint of material production this relation is obvious: an increase in investment leads to a growth of output. But the Keynesians regard this relation from a different angle, from the formation (determination) of money income level. This means that an initially invested amount of money is converted into primary incomes, a part of which is then spent to be converted into secondary, tertiary incomes, and so on. Simultaneously, according to this theory, there should be an increase in employment and output, provided reserve labour-power and reserve production capacities are available.

The multiplier concept does not merely state the existence of a relation between the movement of investment and the growth of the national income.It sees this as a highly rigid relation, assuming a stability of the share of consumption in the national income increment.

The advocates of the Keynesian theory of the cycle regard the consumption function and the related multiplier theory as Keynes's most important scientific contribution. In this context, Hansen wrote: "Anyone who will take the trouble to reread the earlier literature (prior to 1936), keeping in mind the multiplier and consumption function concepts, and supplying the missing analysis where needed, cannot fail, I believe, to see how many dark corners are illuminated once the searchlight of these new instruments is put to use. The investment theory of income fluctuations was able to tell only half the story so long as the consumption function concept and the multiplier analysis were missing. This is the area in which Keynes made his greatest contribution, not only to the general theory of income determination, but also to business-cycle analysis."[1]

The final element in the Keynesian theory of the cycle by means of which Keynesian theorists supplemented the operation of Keynes's multiplier was the acceleration principle, reflecting the impact of national-income increase (caused by an increase in initial investment) on new investment increase, as a result of which the whole process became a closed one. The coefficient which characterised the relation between an increase in investment and the national income growth causing it was itself designated as the accelerator (statistically, this is nothing but the marginal efficiency of invested capital).

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[1] Alvin H. Hansen, *Business Cycles and National Income*, W. W. Norton and Co. Inc., New York, 1951, p. 493.

While the multiplier determines the final impact of investment on national income, the accelerator characterises the feedback effect of national income on investment: it shows the dependence of the changes in capital stock, i.e., net investment, on the changes in output (the changes in national income). There is also the assumption that acceleration requires a different set of conditions than multiplication in order to take full effect. National income growth will require an enlargement of production capacity and, accordingly, fresh investment only when available productive facilities are fully or almost fully employed. Conversely, any reduction or slowdown in national income growth will result in a decline in investment rate and even in disinvestment. Samuelson writes: "It is easy to see that, in the acceleration principle, we have a powerful factor making for economic instability. If business sales go up and down, the acceleration principle can intensify their fluctuation. It induces net investment on the upswing, but causes about the same amount of net *disinvestment* on the downswing."[1]

The Keynesian theory of business cycles is based on this combination of the multiplier and accelerator concepts, which characterise the movement of the national income. This theory has also engendered a conception of business cycle policy which virtually all the developed capitalist countries of the world adopted in the postwar period. What is regulated, in accordance with the theory, is effective demand, both consumer and investment. The main instruments of regulation are fiscal policy, i.e., regulation of government expenditures and revenues, and also tax rates for the purpose of expanding or contracting demand, and measures of monetary policy providing for changes in interest rate and relevant operations on the open market.

2. Business Cycle Model Based on Multiplier-Accelerator Interaction

The orthodox Keynesian theory of cycles has been elaborated by well-known economists like Roy F. Harrod,

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[1] Paul Samuelson, *Economics*, p. 247.

Paul A. Samuelson, John R. Hicks, Lloyd A. Metzler and Alvin H. Hansen. This theory is based on the interaction of the acceleration principle and the multiplier, which generates the fluctuation process in the presence of a scarcity of productive and money resources in the society. This conception of the cycle was first outlined before the Second World War in Harrod's "Trade Cycle", an essay published in 1936. In 1939, Samuelson wrote his "Interaction Between Multiplier and Principle of Acceleration", on the different relations between the multiplier and the acceleration principle, an article that has become something of a classic in bourgeois political economy. In the postwar period, this theory was further elaborated by John R. Hicks in 1950 in his "Contribution to the Theory of the Trade Cycle". In 1958, Alvin H. Hansen put the finishing touches to this theory in his *Business Cycles and National Income*, to which he added a new chapter in 1965.

Hansen, Samuelson and Hicks are now regarded as the founders of the orthodox version of Keynesianism. Let me illustrate what I have said by an examination of the cyclical process as presented in Hansen's writings.

He assumes that technical progress is the prime mover of production growth. Technical progress, revolutionising production methods and generating new industries, requires new investment—autonomous investment. Every "portion" of autonomous investment gives an impetus to the multiplier-accelerator process: investment generates incomes whose amount tends to increase with the increase in the spent part of the income (propensity to consume); the growth of incomes generates induced investment, which in turn increases the national income, up to a point where the multiplier-accelerator effect is worked out; cumulative self-sustained upswing is generated, having been initially triggered off by autonomous investment.

Hansen says that technical progress not only generates autonomous investment, but also determines the magnitude of the accelerator, i.e., the ratio of the increase in capital-to-output increment required in accordance with the given technological conditions. That is why the intensity and duration of economic growth are determined exclusively by the nature of technical progress.

The growth process generated by exogenous factors (technical progress) and the induced cumulative process may prove to be either sufficient or insufficient to induce the employment of all the available labour resources. He writes: "Whether this complicated, interrelated growth process is or is not sufficiently powerful to absorb the entire increase in the labour force and thus reach the full potential growth of real income will depend upon a) the magnitude of the autonomous investment opportunities opened up by the burst of innovations, b) the marginal propensity to consume which fixes the value of the multiplier, and c) the acceleration coefficient. This latter is not given once and for all but changes at the margin whenever a new technique is introduced."[1]

What then determines the "turning point", i.e., the point at which the process of growth ceases, the upswing runs out and downswing sets in? According to Hansen, there are two groups of factors behind the process. The operation of one group of factors results in a gradual running out of autonomous investment, at any rate, until technical progress opens up fresh potentialities for profitable investment. Among these are: as investment increases, there is a decline in the expected rate of return on invested capital (marginal efficiency of investment), the prices of capital goods go up, and finally, interest rates rise. All three factors, taken together, slow down autonomous investment. The second group of factors is connected with the running out of the "supercumulative process", which is generated by the multiplier and accelerator effect.

This specific interaction is well illustrated by an example presented by Hansen in his *Business Cycles and National Income.*[2]

Here, it is assumed that autonomous investment is constant (A, column 1); that induced consumption is a stable share of income in the preceding period ($C_t = \frac{2}{3} Y_{t-1}$, column 2); that induced investment is equal to consumption increment multiplied by the accelerator $I_t = 2(C_t - C_{t-1})$, column 3); and the total deviation of income (Y_t, column 4) is the sum total of the three.

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[1] Alvin H. Hansen, "Towards a Dynamic Theory of the Cycle", *The American Economic Review*, Vol. 42, May 1952, p. 81.

[2] Alvin H. Hansen, *Business Cycles and National Income*, W. W. Norton & Company Inc., New York, 1951, p. 174.

It is also assumed that the volume of induced disinvestment, i.e., reduction in net investment, caused by a decline in consumption, does not exceed 10 units.

Table 1

Multiplier-Accelerator Interaction

Base period	A_t	C_t	I_t	$Y_t = A_t+C_t+I_t$
0	0.0	0.0	0.0	0.0
1	10.0	0.0	0.0	10.0
2	10.0	6.7	13.4	30.1
3	10.0	20.0	26.6	56.6
4	10.0	37.8	35.6	83.4
5	10.0	55.6	35.6	101.2
6	10.0	67.5	23.8	101.3
7	10.0	67.6	0.2	77.8
8	10.0	51.8	(−10.0)	51.8
9	10.0	34.5	(−10.0)	23.0
10	10.0	23.0	(−10.0)	23.0
11	10.0	15.3	(−10.0)	15.3
12	10.0	10.2	(−10.0)	10.2
13	10.0	6.8	(−6.8)	10.0
14	10.0	6.6	(−0.4)	16.2
15	10.0	10.8	8.4	29.2

This formal example shows that a slowdown in national income increment arises simply as a result of the fact that in each period only a part of the earlier income is spent on consumption, so that the growth of consumption is gradually slowed down. This peculiar consumption dynamic is intensified by the accelerator effect: so long as consumption growth has a positive value, the accelerator generates induced investment which slows down the reduction in national income. But when the reduction in consumption begins (being, for its part, the result of a slowdown in national income growth), the accelerator begins to operate with redoubled force in a negative direction, so causing a drop in net investment and increasing the reduction in national income. But since the shrinking national income will generate a smaller reduction in consumption, the decline in consumption will gradually slow down, at some point assume a positive value, and the multiplier-accelerator mechanism will start working in the reverse direction.

The business cycle mechanism described by Hansen and other Keynesians undoubtedly contains essential technico-economic interrelations which arise in the process of cyclical reproduction. At the same time, these relations are so "stripped" of the peculiarities and contradictions of the capitalist economy that the Keynesian theory of the cycle turns out to be a very far cry from any truly scientific explanation of the nature of the business cycle under capitalism. We must give Keynesian theorists their due: they admit that the capitalist economy is inherently cyclical.

Hansen wrote: "The modern analysis reveals that, so long as the economy remains dynamic, so long as the requirements of growth and progress call for large investment outlays, powerful forces will be at work to produce cyclical fluctuations. One cannot, therefore, regard the cycle as a pathological condition.

"It is inherent in the nature of the modern dynamic economy. 'Built-in' institutional arrangements can indeed narrow the limits of oscillation. But only in a measure. A positive counter-cyclical program is necessary."[1]

But in analysing the interrelation included in the cycle theory and—most importantly—by ignoring a number of highly essential interrelations characterising capitalist production, they have allowed so many simplifications and reservations that orthodox Keynesian theory has turned out to be untenable either in scientific terms or in terms of economic policy.

Thus, while indicating a number of important interrelations characterising capitalist reproduction, the Keynesians failed to bring out the internal socio-economic causes behind them. Their view of the behaviour of the consumption function is a case in point. The latter, as I have already said, has an important role to play in the general-cycle concept: it serves as a factor which generates and determines the dynamic of induced investment. The slowing down of consumption growth gradually reduces demand for induced investment, so that the operation of the multiplier-accelerator mechanism is gradually worked out. Why then does consumption not grow at a constant rate proportionately to national income growth?

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[1] Ibid., p. 497.

The only explanation of this dynamic of consumption and the alleged stability of the marginal propensity to consume is provided by Keynes's "fundamental psychological law". But this "law" in effect camouflages the antagonistic class character of consumption under capitalism and the dependence of personal consumption on income distribution and other economic and social factors. While establishing the objective connection between the growth of personal consumption and induced investment (induced demand principle) Keynesian theorists of the cycle ignore the fact that under capitalism this connection is not effected either directly or immediately; the mechanism behind the interrelation of the two inevitably implies a sharpening of the contradiction between output and consumption. There can be no even decline in induced investment because this connection reveals itself forcibly, as an overaccumulation of capital, as a general crisis of overproduction.

Hansen also gives a simplified explanation of the causes behind the reduction in autonomous investment on which, according to his theory, the intensity and duration of the upswing phase depends. Hansen says that the reduction in this investment also runs evenly as a result of the drop in the expected rate of return. Actually, there is, as a rule, no such evenness in the movement.

The reduction in investment usually itself turns out to be a result of the crisis, of the manifested gap between the expansion of production capacities through vigorous investment activity in the upswing period, and the slower growth of final consumption determined by the effective demand of the working masses. Marx wrote: "The ultimate reason for all real crises always remains the poverty and restricted consumption of the masses as opposed to the drive of capitalist production to develop the productive forces as though only the absolute consuming power of society constituted their limit."[1]

Crises are rooted in the basic contradiction of capitalism, as manifested in the contradiction between production and consumption, in the anarchy of social production, and in the contradictions between the conditions in which surplus-value is created and realised.

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[1] Karl Marx, *Capital*, Vol. III, Progress Publishers, Moscow, 1974, p. 484.

The excessive simplification of the Keynesian theory of the business cycle is also evident in the neglect of a number of important economic factors which have a highly tangible effect on the concrete forms in which the cycle proceeds.

The premise of the stability, the inflexibility of prices and wages has turned out to be especially out of touch with the reality. As a rule, economic interrelations and reactions in Keynesian models (the impact of investment on national income growth and the feedback effect) are examined on the assumption of constant prices, i.e., on the assumption of a resulting change in the level of real national income. If there was a change of prices, it was assumed that this was inessential and could be ignored in the theoretical construction of short-term processes. It is here that the Keynesian theory of the cycle and the business cycle policy based on it have erred most. The growth of inflation and the steady increase of prices, even in the presence of idle production capacities and sizable unemployment, and "non-traditional" behaviour of investment in these conditions, all of this caused the orthodox Keynesian theory of the cycle to be criticised back in the 1960s and led to its virtual collapse when bourgeois political economy plunged into crisis in the 1970s.

The essential shortcomings of the orthodox Keynesian theory of the cycle also spring from the fact that it allowed a secondary, subordinate role to monetary factors. In some way, money supply is adapted to the national income dynamic, but how this is done and what impact money supply has on the dynamic of economic activity were all questions that were left outside the framework of the theory.

It is true that the advocates of the orthodox Keynesian theory of the cycle could not ignore the chain of connections between money supply and national income which Keynes formulated: $M \rightarrow r \rightarrow I \rightarrow Y$, where M is the mass of money in circulation, r—interest rate, I—investment, and Y—national income. According to this scheme, money supply has an effect on interest rate, interest rate on investment, and investment—via the multiplier effect—on the national income. But the whole point was that the first two elements of this chain were not regarded as being sufficiently reliable. Keynes also expressed much doubt concerning the effective influence of monetary policy on interest rate ($M \rightarrow r$), especially in the short term. These are the doubts which induced him to turn to fiscal policy as a more reliable way of exerting a direct influence on investment. He also had some doubts about the second element of the chain, $r \rightarrow I$, i.e., about the influence of interest rate on investment. At any rate, these doubts, borne out by a number of empirical studies, especially concerning the connection between changes in interest rate and investment, were the reason why both elements of monetary influence turned out to be effectively discarded in the orthodox conception, with all the attention concentrated on the "real" part of the process: the interaction of investment and income ($I \rightarrow Y$). The result was a paradoxical situation in which the theory which Keynes initially formulated as a theory of money income was altogether abstracted in the writings of his followers from the influence exerted on income by changes in money supply and prices.

As a result, having eliminated from theoretical analysis the inner uniformities of capitalist production, and also the processes underway in the sphere of money circulation, the dynamic of costs and prices, the relations taking shape between the changes in wages, interest and profit, the relations between the parameters of economic growth and the nature of technical progress, the followers of the Keynesian line found themselves incapable of constructing sufficiently realistic models of the business cycle. Those are the shortcomings of the theory that have led to numerous errors in economic policy as well. All this has drawn sharp criticism of the Keynesian concept of the cycle and the consequent policy of demand control, whose failure became especially evident in the 1970s, when inflation grew stable and chronic. The 1973-1974 crisis and the subsequent period showed that the traditional Keynesian theory of the cycle requires a fundamental review and renewal.

CHAPTER THREE

THE KEYNESIAN THEORY OF ECONOMIC GROWTH

1. Growth Rate and Saving Ratio

In the late 1930s, attempts were made to adapt Keynes's theory to an analysis of long-term economic growth. In 1939, the British economist Roy F. Harrod wrote an article formulating the basic principles of a theory of dynamic economics. Just then Hansen, a leading US Keynesianist, began to elaborate his theory of stagnation. However, the study of economic growth problems became most widespread after the Second World War, mainly because of the new economic and political conditions. Harrod's *Towards a Dynamic Economics* was published in 1948 and was a tremendous success. Almost simultaneously, Evsey D. Domar in the United States came forward with similar ideas, and a host of other economists wrote to further develop a conception which is now known as the Keynesian theory of economic growth.

The theory of economic growth deals with three groups of problems: the problem of factors which determine the potential growth of the national income over a long term; the problem of conditions for "self-sustained growth", and the problem of dynamic equilibrium, that upset it and how it is re-established.

While the analysis of long-term growth factors mostly assumed the form of empirical studies, "self-sustained growth" and dynamic equilibrium constituted the substance of theoretical speculations and the further elaboration of abstract models of economic growth. The US economist Robert M. Solow said that "most of the modern theory of economic growth is devoted to analysing the properties of steady states and to finding out whether an economy not initially in a steady state will evolve into one if it proceeds under specified rules of the game".[1]

In the theory of economic growth, "self-sustained growth" was characterised by the following basic features, which back in 1958 were defined by the British economist Nicholas Kaldor as a group of "stylised facts":

– stable growth of labour productivity and of national income (with stable population growth);

– stable growth of capital and of the capital-labour ratio;

– trend towards a constant capital-output ratio;

– stable rate of profit and also of the share of profit in the national income.

This group of "stylised facts" provided the basis for the hypothesis that an economy with a constant growth of output, employment and capital, with a constant capital-output ratio and constant relations of distribution tends to ensure "self-sustained growth" in the long run. It was up to theory to explain how the conditions for "self-sustained growth" took shape and to establish whether an economy was capable automatically of balancing out deviations from this line of development.

The Keynesian theory of growth was an attempt to solve these problems on the basis of the Harrod-Domar models.[2] In these models the potential income growth is determined by two factors: the accumulation rate and the capital-output ratio, which is rigidly fixed by technological conditions.

Keynesian theory took a sufficiently realistic view of the problems of "self-sustained growth" and the mechanism of balanced growth.

First, it drew a distinction between two types of growth:

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[1] Robert M. Solow, *Growth Theory. An Exposition*, Clarendon Press, Oxford, 1970, p. 4.

[2] Present-day post-Keynesians (this new trend in bourgeois economics is analysed below) regard the Harrod-Domar growth models as the first breakthrough in orthodox Keynesianism towards a development of a post-Keynesian theoretical system. "The first step in the development of a post-Keynesian, as distinct from a Keynesian, analysis came with Harrod's work in the 1930s on growth dynamics" (Alfred S. Eichner, "Post-Keynesian Theory: An Introduction", Op. cit., p. 7).

that which accorded with full employment ("natural growth rate") and that which met the interests of the entrepreneurs, but which did not necessarily coincide with the conditions of full employment ("warranted growth rate").

Second (and this is the main thing), neither type of growth, according to Keynesian theory, constituted a truly steady dynamic equilibrium. The actual growth rate could only accidentally coincide with one of these, so that the system was subjected to short- and long-term deviations from the state of equilibrium, which is why it needed to be regulated by the state. This conclusion was drawn on the basis of Keynesian growth models in complete conformity with the notions held by Keynes and his followers concerning the imperfections of the capitalist economy, its serious defects which required state intervention for the maintenance of the necessary economic proportions.

Let us now consider the problem of determining the potential rates of growth and the conditions for dynamic equilibrium over a long term, i.e., the conditions for the maintenance of stable economic growth rates with the full employment of labour and material resources. "In examining an expanding economy we may consider the interrelations between the expansion in three fundamental elements, viz. (1) manpower, (2) output or income per head and (3) quantity of capital available."[1] These interrelations are examined through the construction of aggregate models of economic growth, linking up the growth rate with the capital accumulation rate. While Keynes analysed only the income-creative role of capital investments, i.e., the influence of an increase in investment on income growth, his followers set themselves a broader task, namely, to establish the feedback influence of national income growth on the level of investments; to determine the necessary rate of growth which could ensure full employment of production capacities and a country's growing population. They gave special attention to the problem of capital accumulation in terms of the realisation of that part of the social product which was to go into productive consumption.

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[1] Roy F. Harrod, *Towards a Dynamic Economics. Some Recent Developments of Economic Theory and Their Application to Policy*, Macmillan and Co. Ltd., London, 1948, p. 20.

In Keynesian models, the saving problem is, as a rule, analysed on the basis of the saving-investment analysis. Two concepts are used to designate the part of the national income which is not spent for consumption: saving (*S*) and investment (*I*). Over a definite period of time, saving and investment are equal. But if one switches from static to dynamic analysis, the two terms will designate somewhat different things: saving comes to mean that part of the national income which has not been consumed today and is earmarked for investment; and investment—that part of the unconsumed national income for which productive demand will be made tomorrow. Consequently, when considering the equality or inequality of saving and investment, it is not real magnitudes but a real and an expected magnitude—supply and demand—that are compared with each other. The actual saving may be either greater or lesser than the expected investment. The difference between the two is characterised by changes in inventories, the extent of the underloading of productive capacities, changes in employment and, finally, growth rates. Consequently, equality of saving and investment characterises a state of dynamic equilibrium: demand for investment is equal to the supply of saving, so that the economy does not face any difficulties. Excess of saving over expected investment results in a growth of inventories, underloading of capacities (lower level of output) and unemployment, denoting a state of shrinking production. By contrast, excess of investment demand over saving will mean excessive growth with rising prices. This concept can be used as a starting point for analysing the disruption of economic equilibrium. But its main flaw is that it fails to show the causes behind these processes. It has no room for the factors which determine the emergence of disproportions in the realisation of that part of the social product which is earmarked for accumulation.

But that is the very basis on which most Keynesian economic growth models are structured: Harrod's growth model; Kaldor's model;[1] and Domar's model, which is more broadly based, but which also includes the above-mentioned equilibrium.

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[1] Nicholas Kaldor, "A Model of Economic Growth", *The Economic Journal*, The Quarterly Journal of the Royal Economic Society, Vol. LXVII, No. 268, December 1957, pp. 591-624.

Consequently, all these models have the two aspects—saving and investment—whose equality is ensured whenever the real magnitude (saving) is equal to the expected magnitude (investment). That is why the central problem is to identify the factors which determine the level of expected investment. What then are the factors that determine the magnitude of net investment and its share in the national income, i.e., the rate of accumulation?

Acceleration is the concept most widely used in bourgeois theories of growth today to determine net investment. It says that the amount of net investment over the long term is determined by two indicators: national income growth rate and the amount of investment required to produce a unit increase in income, i.e., the capital-output ratio, or the capital coefficient. Since the latter indicator is regarded as given, increase in output is said to be ensured only by means of net investment, so that growth rate depends only on one factor, the accumulation rate. That is why the Keynesian model of economic growth is classified as a one-factor model.

Let us now consider Harrod's fundamental growth equation, which is based on the above-mentioned premises. This equation has two forms.

There is the form of a simple truism: $GC = s$, where
G is the national income growth rate;
C—the capital coefficient, or the volume of investment divided by the national income increment; and
s—saving ratio.

All the magnitudes apply to one and the same past period (ex post), which is why the said equation does not require any special conditions for being realised.

From this form of equation Harrod goes on to its other form, which, he says, expresses "the equilibrium of a steady advance":[1] $G_w C_r = s$, in which s alone is given and relates to the past. The whole left side of the equation is determined by the required magnitudes: C_r is the marginal capital product ratio (required capital coefficient). "Whereas in the truistic equation there was an ex-post term expressing the amount of capital goods actually produced per period, C_r is an equilibrium term expressing requirements for new capital."[1]

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[1] Roy F. Harrod, *Towards a Dynamic Economics*, London, 1948, p. 81.

G_w is the warranted growth rate which makes the right side of the equation equal to the left side, i.e., which makes the *ex ante* saving equal to the *ex post* saving.

The dynamic equilibrium, ensured by a warranted growth rate, implies full employment of existing productive capacities and maintenance of a stable rate of profit for the capitalists. Harrod draws the conclusion that the growth rate ensuring dynamic equilibrium G_w must be constant. His conclusion is based on two premises: the assumption that the saving ratio s is constant, and the assumption that the marginal capital-product ratio C_r is constant. Since $G_w = \frac{s}{C_r}$, and the numerator and the denominator are constant, G_w must also be constant.

Harrod adds: "A unique warranted line of growth is determined jointly by the propensity to save and the quantity of capital required by technological and other considerations per unit increment of total output. Only if producers keep to this line will they find that on balance their production in each period has been neither excessive nor deficient."[2]

Harrod does not go into the causes which determine the constancy of the required capital coefficient, although it has an important part to play in his concept. He simply starts from the assumption that technical progress is neutral, in consequence of which the growth of capital and the growth of output over the long term proceed at the same rate.

Harrod believes that over the long term technical progress is neutral because periods of mainly capital-intensive technical progress alternate with periods of mainly capital-saving progress, on balance compensating each other, so that economic growth models may be structured on the assumption that technical progress is neutral.

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[1] Ibid., p. 82.

[2] Ibid., p. 265.

A similar conclusion about the need for a constant growth rate as a condition of dynamic equilibrium was reached by the US economist Evsey D. Domar.[1] Hence, the Harrod-Domar theory.

Domar's initial model differs in some respects from Harrod's, being based not on equality of saving and investment, but on equality of money income (demand) and productive capacity (supply).[2] Domar stresses that this is something of a synthesis of the pre-Keynesian and the Keynesian approaches. Economists before Keynes usually considered only supply, assuming demand to be a given magnitude. By contrast, Keynes concentrated on demand, altogether ignoring the growth of output. Domar tries to combine the two approaches, and like Harrod starts from the premise that the parameters of his model—the share of saving in income and the average efficiency of investment, corresponding to the inverse fraction of capital coefficient—are constant. Domar determines "effective demand" from Keynes's national income theory. He includes in it investment as an independent variable, consumption functionally connected with investment, and government expenditures. He follows Keynes in stressing that income increment is a function of investment increment.

He determines supply, or productive capacity growth, on the strength of the accelerator theory and regards it as a function of investment. Apart from investment, he brings all the other factors which influence the growth of productive capacity—growth of labour and technical progress—together in one indicator of "productivity" of investment, or efficiency of investment. Although Domar regards this indicator as a constant, he does make one essential reservation: "Our growth models do not require that capital productivity remain constant; only that its changes be known and reasonably regular. As a first approximation it may be assumed to be constant."[3] This makes his model somewhat different from Harrod's.

Yet another distinction also needs to be stressed.

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[1] Evsey D. Domar, *Essays in the Theory of Economic Growth*, Oxford University Press, New York, 1957.

[2] Productive capacity is here taken to mean potential output under full employment.

[3] Ibid., p. 27.

Domar's dynamic equilibrium model from the outset implies the assumption of full employment (whereas Harrod assumes that dynamic equilibrium may not coincide with full employment). Domar emphasises that his purpose is "to find the conditions needed for the maintenance of full employment over a period of time, or more exactly, the rate of growth of national income which the maintenance of full employment requires."[1]

Domar keeps stressing the two-fold role of investment. On the one hand, he promotes the growth of income, and, on the other, increases productive capacity. Income growth helps to increase employment. But, Domar stresses, one needs to go beyond this point. Investment simultaneously increases productive capacity, which is why income growth must be adequate to balancing out this increased productive capacity in the country, without allowing the emergence of the underloading of productive capacity or redundancy. Accordingly, he formulates the problem as follows: "If investment increases productive capacity and also creates income, what should be the magnitude of investment, or at what rate should it grow, in order to make the increase in income equal to that of productive capacity?"[2]

On the strength of his premises and purpose of analysis, Domar proposes the following equation whose solution gives the formula for the required rate of growth: $\Delta I \frac{1}{\alpha} = I\delta$, from which it follows that $\frac{\Delta I}{I} = \delta\alpha$, where I is the volume of net investment;

ΔI – its annual growth;

$\frac{\Delta I}{I}$ – the investment growth rate;

$\frac{1}{\alpha}$ – the multiplier (α being the share of savings in the national income);

δ – the potential average efficiency of investment.

This formula calls for a few explanations. The left side of the equation contains growth of money income. On the right side, the product of investment and its potential average productivity gives the growth of productive capacity. Domar stresses that δ is a magnitude characterising the potential productive capacity which does not depend on the movement of money income.

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[1] Ibid., p. 84.

[2] Ibid., p. 89.

The second equation, obtained from the first, expresses the required magnitude: the rate of investment growth ensuring full employment and full loading of productive capacity. This rate is equal to the product of the share of savings and potential average productivity of investment. It will be easily seen that this formula is similar to Harrod's warranted growth rate formula, because productivity of investment—a magnitude inversely proportional to capital coefficient—and the saving ratio are constant. It suggests the same conclusion as Harrod's formula, namely, that the required rate of economic growth is constant. "The maintenance of a continuous state of full employment requires that investment and income grow at a constant annual relative (or compound interest) rate equal to the product of the propensity to save and the average (to put it briefly) productivity of investment".[1]

The conclusion that the maintenance of conditions of dynamic equilibrium requires a constant annual percentage of increase of national income was highly important. Neither Harrod, nor Domar have identified the necessity for a steady growth rate with the automatic possibility of maintaining such a rate. Elaborating on Keynes's idea that present-day capitalism does not have any internal forces generating a tendency automatically to restore the equilibrium and make full use of economic resources, both authors, like their followers, have stressed the complexity of the dynamic equilibrium problem and the need to have an appropriate government policy to ensure economic stability. For this view, among others, they were most strongly attacked by the "neoclassicists" and "neoliberals" of every stripe. It was Domar who laid special emphasis on the acute nature of this problem: "Without any formal mathematics, if we just reflect that an increment in capacity is related (however roughly) to investment, while an increase in aggregate demand is connected with the rate of growth of investment, and that therefore a continuous growth of income, and most probably of investment, is required to keep the economy on an even keel, the nature of the capitalist system and the difficulty of its maintaining full employment year after year will become easier to understand."[1]

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[1] Ibid., pp. 91-92.

Domar's article setting out these conclusions carried a witty epigraph from Lewis Carroll's *Alice's Adventures in Wonderland*, where the Queen says: "Now, here, you see, it takes all the running you can do to keep in the same place." Indeed, it takes capitalism all the running it can do merely to keep in the same place, an indication of the vast difficulties facing the capitalist society with its tendency towards slower growth, the very point Keynesian theorists of growth have emphasised in their conclusions.

Keynesian dynamic equilibrium models may be regarded as the first step in the analysis of reproduction correlations, but they are much too simplified to be of any practical importance. Indeed, the authors of these models have said as much. Both Harrod and Domar have repeatedly said that their models were no more than tools for theoretical analysis. Domar wrote: "In any case, a rate of growth of output or of investment in a large and complex economy (or in any economy for that matter) which has been derived from only a few variables should not be taken too seriously."[2] He believed that the main purpose of his work was "not to derive an empirically meaningful rate of growth, but to attempt a solution of an old problem which has appeared frequently in economic literature from Marx (more correctly, from Mandeville and Malthus, if not earlier) to and beyond Keynes, regarding the effects of capital accumulation on current investment, profit rates, and the level of income and employment. I tried to show that there exists a rate of growth of income, however vaguely defined, which if achieved will not lead to diminishing profit rates, scarcity of investment opportunities, chronic unemployment, and similar calamities..., and that as far as we can now judge, this rate of growth is not beyond our physical possibilities."[3]

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[1] Ibid., p. 34.
[2] Ibid., p. 8.
[3] Ibid.

Here are some of the aspects of these growth models which tend to oversimplify the problem of saving, not only in practical, but also in theoretical terms.

One oversimplification, for instance, is consideration of only one factor of national income growth, namely, investment. These models ignore important factors like increase in the loading of existing productive capacity, improvement of industrial engineering, rationalisation not involving large capital outlays, and so on. That is why, in particular, subsequent analysis of reproduction correlations went the way of multifactor models of economic growth (production functions).

Furthermore, these dynamic equilibrium models involve an extremely high level of aggregation. Expanded reproduction requires the observance not only of value, but also of physical proportions, and this implies an analysis of the structure of the aggregated magnitudes used in the models. Marx wrote: "To accumulate it is necessary to convert a portion of the surplus-product into capital. But we cannot, except by a miracle, convert into capital anything but such articles as can be employed in the labour-process (i.e., means of production), and such further articles as are suitable for the sustenance of the labourer (i.e., means of subsistence)... In one word, surplus-value is convertible into capital solely because the surplus-product, whose value it is, already comprises the material elements of new capital."[1] It is this defect of Keynesian growth models that provided the impetus for the formulation of structural models to analyse intersectoral relations in the economy.

There is also much doubt concerning the idea of constant coefficients determining the required rate of economic growth, i.e., the share of savings in income and capital coefficient. This applies especially to the idea of neutral technical progress allegedly making for a long-term tendency towards constancy of the capital coefficient.

Statistical studies of the actual movement of this coefficient reveal different trends in the movement of capital-output ratio both in the economy as a whole and in some of the major industries. Until about the 1920s, there was evidence of an upward trend in capital-output ratio, but from the 1920s on, it gave way to a downward trend. Thus, for instance, according to the US economist Simon Kuznets, the ratio of net capital stock to net national product (both in constant prices) first rose from 3.2 in the early decades to 3.6 in the 1920s, and then declined to 2.9 in 1939-1955.[1]

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[1] Karl Marx, *Capital*, Vol. I, Progress Publishers, Moscow, 1974, pp. 544-45.

An analysis of these changes shows that the decline in capital-output ratio is related both to a change in the structure of production—a shift towards less capital-intensive industries—and to the specific features of technical progress as a result of which labour productivity tended to grow faster than capital-labour ratio in almost all the major industries, with the consequent steady decline in capital-output ratio. Thus, in US manufacturing, capital-output ratio (in 1929 prices) increased from 0.547 in 1880 to 1.022 in 1919, and then dropped to 0.590 in 1953. In the mining industry, it rose from 0.72 in 1870 to 2.30 in 1919, and dropped to 1.26 by 1953.[2]

However, one can hardly accept Harrod's conclusions drawn on the strength of the trends in evidence up to now in the movement of capital-output ratio, namely, that because two trends have run in opposite directions for almost a century, technical progress can be assumed to be neutral, while the steady growth model can be built on the basis of a constant capital-output ratio. The theory of neutral technical progress, to which Harrod referred, ignores the most important trends in the change of capital-output ratio which have always taken place.

While capital-output ratio gradually declined throughout the 1950s and 1960s, since the late 1960s it has once again revealed an upward trend, which was due to a number of difficulties in growth in the 1970s which markedly slowed down both the rate of labour productivity growth and the rate of economic growth as a whole.

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[1] See: Simon Kuznets, *Capital in the American Economy. Its Formation and Financing*, Part III, Princeton University Press, Princeton, 1961, p. 10.

[2] See: D. Krimer, S. Dobrovolsky and J. Borenstein, *Capital in the Mining and Manufacturing Industry of the USA*, Moscow, 1962, pp. 123, 127 (in Russian).

The Keynesian model also has a fundamental epistemological flaw, which is that it cannot serve as a starting point for the study of the capitalist form of economic growth. This becomes most evident as soon as Keynesian theorists of growth start analysing the problem of deviations from dynamic equilibrium. The flaw springs from the fact that the macroeconomic categories with which they operate are not defined in social terms. When we consider Marx's abstract schemes characterising the conditions of equilibrium, we find that they already contain the specific elements of capitalist accumulation. He does not take for his source of investment some vague category, like the "savings of society", but a qualitatively specific part of the social product—surplus-value—which results from the exploitation of the working class. By contrast, Harrod's model does not show the source of capital accumulation and obscures the fact that surplus-value, obtained through the exploitation of the working class, is the main source of saving.

Moreover, in characterising the general conditions of equilibrium, Marx's schemes also help to understand the socio-economic causes capable of disrupting these conditions. They are ultimately connected with the specific distribution of newly created value. His schemes show very well that disruption of the conditions of proportionality produced by the separate movement of wages leads to serious complications in the relations between Department I and Department II, and eventually to crisis. Marx concentrated on analysing the irreconcilable contradictions which spring from capitalist production. By contrast, bourgeois theorists of economic growth, while being unable entirely to ignore the concomitants of capitalist growth, like crises and unemployment, try to sidestep the problem of the contradictions in capitalist production engendering these phenomena. The most important characteristic feature of present-day bourgeois theories of growth is that they abstract from the socio-economic uniformities of capitalism and attempt to present it as having the properties of production in general, outside the context of its socio-economic form.

2. Economic Instability Problem in Harrod's Model

The attempt to tie in long-term growth with cyclical fluctuations, with the rise and fall phases in the development of capitalist production, is an essential feature of the Keynesian theory of growth, the aim being to produce a theoretical explanation of the specifics of the individual cycles, above all of the differences in the depth and duration of the phases of the crisis. An attempt to produce a general theory of economic instability based on the uniformities of growth was made by Harrod.

He based his analysis of short-term, or cyclical, fluctuations on a comparison of the truistic form of his fundamental equation $s = CG$, characterising the actual growth rate, with the form of dynamic equilibrium $s = C_r G_w$. As shown above, the former equation is satisfied in any case, regardless of the phase of economic cycle, while the latter requires a corresponding level of investment per unit of output growth for the maintenance of a definite growth rate. Harrod's reasoning runs as follows: if actual growth rate G starts to go up, then, assuming that s does not rise at once in the same proportion, C will tend to fall. It will turn out to be lower than the standard value of C_r. The result will be a shortage of capital goods—raw and other materials and equipment—and this will be an inducement for an even greater increase in the actual growth rate. This will push the economy even farther away from the stable line of advance. The same phenomena, only in the opposite sense, will operate under an actual growth rate that falls below the warranted rate. Harrod reaches this conclusion: "Around the line of advance, which, if adhered to, would alone give satisfaction, centrifugal forces are at work, causing the system to depart further and further from the required line of advance".[1]

Harrod emphasises that the actual growth rate results from the trial-and-error behaviour of a great number of men and can coincide with the level of warranted growth rate only through sheer accident. But any deviation is fraught with even greater departures from the line of dynamic equilibrium. "Thus, in the dynamic field we have a condition opposite to that which holds in the static field. A departure from equilibrium, instead of being self-righting, will be self-aggravating."[1] This conclusion in itself tends to undermine the basic proposition of the old vulgar bourgeois economics, which presented the capitalist mechanism of production as a self-regulating one in which any departure from the state of equilibrium at once generated forces helping to restore the equilibrium.

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[1] Roy F. Harrod, Op. cit., p. 86.

However, Harrod's theory adds very little to the understanding of why the equilibrium is upset. According to this theory, changes in the growth rate subsequently producing cumulative deviations may arise from purely accidental causes, like uneven development of various industries due to seasonal fluctuations in production, or erroneous determination of growth rates. It also fails to provide an answer to the question as to why the process of expansion of production tends to run out or why the crisis ends and a fresh upswing begins. It implies that the limits to cumulative upswing are set by the available supply of labour and the technical conditions of production which determine a natural rate of growth. Similarly, any crisis decline in output is stopped by casual factors, like a new invention or a large new building project, which make demand on investment and which temporarily restore the equilibrium between warranted and actual rates of growth until some new casual factor brings about a discrepancy between the two.

Harrod believes that in order to analyse the nature of cyclical fluctuations and the duration of this or that phase of the cycle, it is highly important to establish the relations not only between the actual and the warranted growth rate G and G_w, but also the relation between the warranted and the natural growth rate G_w and G_n.

Natural growth rate is a rate which is allowed by the growth of the population, the corresponding supply of labour and the technical conditions of production. While the warranted rate expresses the line of "entrepreneurial equilibrium" and does not rule out "forced unemployment", the natural rate implies full employment not only of productive but also of manpower resources. Departures of G_w from G_n will characterise either the state of a chronic oversupply of labour if $G_w > G_n$, or, conversely, its chronic shortage if $G_w < G_n$. If the actual growth rate exceeds the warranted rate when $G_w < G_n$, G may exceed G_w for long periods of time, because G_n is its ceiling, as determined by the fundamental conditions. Harrod observes: "Consequently there is no reason why the economy should not enjoy a recurrent tendency to develop boom conditions."[1] If the actual rate of growth exceeds the warranted rate, while the latter is in excess of the natural rate when $G_w > G_n$, such excess can be extremely short-lived. The overriding trend will be a slowdown in the actual rate below the warranted rate, while the economy moves into a predominantly depressed state.

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[1] Roy F. Harrod, *Economic Essays*, London, Macmillan and Co. Ltd., 1952, p. 264.

In Harrod's theory, the "natural growth rate" concept serves not only as the upper and lower limit of the upswing or downswing in output. According to Harrod, the discrepancy between natural and warranted growth rates makes for sustained upward or downward trends in the development of capitalist production. He asks this question: are there any forces in the capitalist society which would automatically even out warranted and natural growth rates, in other words, are there any forces automatically maintaining entrepreneurial equilibrium in accordance with the requirements of the fundamental conditions? Since savings are the main growth rate parameter which depends on human will, the problem boils down to analysing the dynamics of savings. Are there any factors that would automatically stimulate a level of savings corresponding to the level of savings required to ensure equilibrium growth?

For 19th-century economists, the answer was yes, because they assumed that the interest rate was the mechanism that balanced out demand and the supply of savings. Harrod rejected this proposition and asserted that there were no stimuli operating for automatic balance. He divided all savings into three types: life-time savings or "hump-savings"; savings for posterity, and corporate savings. Considering the impact of a declining interest rate on the amount of savings, he reached the conclusion that interest rate has an indefinite effect on the total amount of savings and assumed that incremental corporate savings were likely to rise in response to a falling rate of interest, while hump-savings were likely to fall; the effect on savings for posterity was unknown.

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[1] Roy F. Harrod, *Towards a Dynamic Economics...*, p. 88.

Consequently, Harrod was unable to follow any direct connection between changing interest rates and the amount of savings. From this it followed that the level of actual savings could for a long time deviate from the level of savings necessary for the optimal employment of available resources, while the warranted growth rate would depart from the natural rate, without there being any automatic regulators to induce a re-establishment of the balance between them. Accordingly, Harrod considered three possible cases in the relation between warranted and natural growth rates.

1) $G_w = G_n$. This is the ideal line of advance, when all the productive capacity and all the available labour are being used.

2) $G_w > G_n$. Here, the economy would be in a state of protracted stagnation.

Here is how Harrod reasoned. Assuming the natural growth rate to be 0.03, and capital coefficient—3, the saving ratio, corresponding to natural growth rate, would then come to: $3 \times 0.03 = 0.09$, assuming that the saving ratio had gone up to 0.12. In that case, warranted growth rate should be equal to $\frac{0.12}{3} = 0.04$. The warranted growth rate would exceed the natural rate, i.e., the rate that the economy could ensure under the given constraints (natural population growth, rate of technical progress, etc.). So, natural growth rate cannot cause a growth of investment that would make full use of savings. As a result, the society would suffer from chronic oversaving. This would produce excess capacity, rising inventories, bankruptcies and the attendant unemployment. In these conditions, the economy would suffer from underloading of enterprises and chronic unemployment for a long time. In that event, he says, the correct policy would be to reduce the rate of saving, which also reduces G_w.

3) When $G_w < G_n$, developments would run in reverse.

Let the rate of saving fall to 0.06. In that case, warranted growth rate would come to $\frac{0.06}{3} = 0.02$. Meanwhile, natural growth rate, equal to 0.03, presents a demand for a saving ratio equal to 0.09, and this produces a chronic shortage of savings. The demand for investment would be constantly in excess of its supply, with all the ensuing consequences: more intensive employment of equipment, growth of profits, inflation, and so on. In that case, he says, it would be advisable to raise the saving ratio, which would increase G_w accordingly, and bring it closer to the value of G_n.

"Thus," says the US economist Kenneth K. Kurihara, who supports this theory, "it can be stated that as long as the 'warranted' growth rate exceeds the 'autonomous' growth rate (the natural growth rate–*I.O.*) saving is a deflationary force. The logical need in this case is less saving. Contrariwise, as long as the 'warranted' rate is lower than the 'autonomous' rate, the savings ratio represents an inflationary force. In this opposite case what is needed is more saving."[1]

The British economist W. A. Eltis, who has analysed Harrod's model in detail (also considering the role of technical progress and the relation between the rate of growth and the rate of profit) reached the same conclusion: "Since many saving decisions are not directly related to investment opportunity, G_n and G_w will differ, apart from a fluke. Nor is there any real hope that C_r or s will alter naturally to equate them. A prerequisite for continuous growth at full employment without labour scarcity is then that the government will equate G_n and G_w by altering C_r through changes in social investment, or by altering s through the budget."[2]

It is the analysis of the savings problem that most clearly brings out the similarities and dissimilarities between Harrod's and Keynes's theories. The latter took a strictly negative attitude to saving, which he believed to be no more than a deduction from effective demand, so that wherever saving was not compensated by growing investment activity, the national income would tend to fall. Harrod, by contrast, took a two-fold attitude to saving, depending on the economic conditions. Harrod said: "Saving is a virtue and beneficial so long as G_w is below G_n. While it is disastrous to have G_w above G_n, it is not good to have it too far below, for in that case, although we may have plenty of booms and a frequent tendency to approach full employment, the high employment will be of an inflationary and thereby unhealthy character. In these circumstances, saving is a virtue since, by raising G_w, it enables us to have good employment without inflation. But if G_w is above G_n saving is a force making for depression."[1]

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[1] *Economics and the Public Interest,* Robert A. Solow, Editor, Rutgers University Press, New Brunswick-New Jersey, 1955, p. 276.

[2] W. A. Eltis, *Economic Growth. Analysis and Policy,* Hutchinson, London, 1966, p. 97.

Harrod's comparisons of various growth rates are simple and strictly consistent, and we find him taking a fairly critical view of capitalism's capacity as a self-regulating mechanism. He shows that capitalism is incapable of following a line of stable advance even over the long term, ignoring the "short-term fluctuations". And while Harrod, like Hansen, fails to give a satisfactory answer about the factors causing the various deviations (they turn out to be outside the framework of his analysis),[2] his theory has brought out a number of problems that are important for an understanding of the mechanism behind the workings of the cycle.

Harrod takes a broader view of the problem of barriers to economic growth than did the proponents of the multiplier-accelerator model. In this context, I believe, his concept of natural (or potential) rate of economic growth, which is determined by a country's technical, economic and natural resources, including natural population growth, does extend our knowledge.

This rate constitutes the "ceiling" for real growth of output over the short term. Growth above this "ceiling" tends to produce disproportions and other upheavals in the economic system similar in effect to those arising from disproportions between growth of output and growth of effective demand (Marx emphasised that the latter was a specific instance of the general tendency of capitalist production towards disproportionality).

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[1] Roy F. Harrod, *Towards a Dynamic Economics...*, pp. 88-89.

[2] Harrod himself regards this theory as an introduction to the theory of cycles, which has still to be developed: "It is far from my purpose to give a finished theory of the trade cycle. Lags, psychological, monetary and other factors, no doubt play their part. I should suggest that no theory can be complete which neglects the fundamental causes of instability expressed in the equations which have been set out" (Ibid., p. 89).

CHAPTER FOUR

THE MARXIAN THEORY OF REPRODUCTION AND THE KEYNESIAN THEORY OF ECONOMIC GROWTH

1. The Marxian Theory of Reproduction

A critical analysis of the Keynesian theory of economic growth leads to the following question: what are the basic distinctions between the bourgeois theory of economic growth and the Marxian theory of reproduction?

Consideration of this question rests on two circumstances. On the one hand, the development of economic growth theory in the West has heightened interest among many economists in classical bourgeois political economy and in Marx's writings. The British economist Joan Robinson wrote, for instance: "The revival of interest in the classical questions brings a revival of the classical theory."[1]

Writings on economic growth problems contain many statements to the effect that bourgeois economic growth theories are akin to the Marxian theory of reproduction, and even the recognition that Marx was an intellectual predecessor of Keynes and the present-day theorists of economic growth.

On the other hand, we also find the very opposite view that economic growth theory, with all its technico-economic problems of rates and proportions of economic growth is a monopoly of bourgeois economic thought, and that Marxian economic thought has allegedly neglected these problems almost entirely or has hopelessly lagged behind in their study.

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[1] Joan Robinson, *The Accumulation of Capital*, Macmillan and Co. Ltd., London, 1956, p. VI.

That is why, in concluding my critical analysis of Keynesianism, I feel that it is necessary to deal with some fundamental distinctions between it and the Marxian theory of reproduction.

Some Western economists, as I have already said, hold the Marxian theory of capitalist development to be a predecessor of present-day theories of economic growth, a conclusion reached on the strength of the obvious but superficially considered fact that many of the problems on which economic theorists now tend to concentrate had earlier been formulated by Marx. There are any number of statements recognising Marx's priority in formulating and solving a number of economic growth problems. A long list of such problems together with their characteristics was given, among others, by Professor Martin Bronfenbrenner in his paper entitled "*Das Kapital*: A Centenary Appreciation", which he presented at the Seventy-Ninth Annual Meeting of the American Economic Association, December 27-29, 1966.[1] Among these problems, he listed Marx's theory of simple and expanded reproduction, the theory of unemployment and the business cycles; the beginnings of the theory of imperfect competition, etc. Bronfenbrenner also admitted that none of the economists since then had been able to rise to such heights in synthesising static and dynamic analysis, economic theory in the narrow sense of the term and social analysis, as Marx had done. He added that Marx's was a theory developed at the junction of various sciences, and that attempts to produce such a synthesis in the West were in their early stages.

A high appreciation of Marx was once given by Evsey Domar, who declared that the modern theory of growth originated in Marx's theory of reproduction. For his part, Kurihara wrote: "The Marxian theory of capitalistic development anticipates many modern long-run theories, namely, the stagnation theories of Keynes and Hansen, the dynamic theories of Harrod and Domar, the 'cyclical growth' theories of Schumpeter, Kalecki, Kaldor, and Goodwin, and Mrs. Joan Robinson's theory of structural underemployment."[1]

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[1] *The American Economic Review*, Vol. LVII, No. 2, May 1967, pp. 625-35.

Such admissions are in themselves notable and important theoretically and politically, emphasising once again the strength and correctness of Marxian theory, which gives a truly scientific approach to the solution of many problems in the development of present-day capitalism. But in these statements, the fundamental distinctions between the Marxian theory of reproduction and present-day bourgeois theories of growth are lost sight of and obscured. Indeed, this kind of "recognition" usually implies a denial of Marxism as the socio-economic theory which has laid bare the essence of the capitalist society (and above all a denial of the theory of value and surplus-value); it implies a denial of Marxism as the theory which shows that the capitalist mode of production is a historically transient one. The result is an obliteration of the revolutionary substance of Marxism.

The first thing that needs to be stressed is that Marx's theory of capitalist reproduction is much broader than the theory of growth. Marx showed that any mode of production develops in consequence of the operation and interaction of two sets of uniformities: technico-economic uniformities which are determined by the level of development of the productive forces and the pace of economic growth; and socio-economic uniformities which spring from the nature of property and the relations between classes and social groups in a society.

Both sets of interconnections are relatively independent but at the same time determine each other, with socio-economic uniformities being of crucial importance in asserting the fundamental historical trends of development.

Accordingly, economic growth may be considered in two contexts: in the narrow context, as the growth of the basic indicators of social product and all the consequent changes in macroeconomic indicators and technico-economic interconnections; and in the broad context, as change in social institutions and the relations of production which signifies transition from one social structure to another or adaptation of the relations of production within the framework of one and the same mode of production.

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[1] Kenneth K. Kurihara, *The Keynesian Theory of Economic Development*, Allen & Unwin, London, 1959, pp. 17-18.

The economic growth theories being developed in the West deal chiefly with the general technico-economic uniformities and trends in the development of the productive forces. They generalise and formalise the relations between growth rates and structural proportions in the national economy in different conditions of its development, under different types of technical progress and levels of development of the productive forces. These theories are focussed on an analysis of technico-economic (technical-balance) interconnections which determine stable and balanced economic growth, and on the causes behind the deviations from such growth. They analyse the connections between growth rates and basic proportions in national economic development; technico-economic factors behind economic growth, and so on.

However, they tend entirely to abstract themselves from the socio-economic conditions and the consequences of economic development, regarding these as being extra-economic data irrelevant to analysis. But this kind of approach not only strips away most of the content of these theories and reduces them to a description of the superficial economic interconnections; it also explains why these concepts are used for apologetic purposes, for vindicating the status quo.

It was the view of the late US economist Paul A. Baran that economic growth models told us nothing about the capitalist reality. He wrote: "By postulating the existence of adequate direct or indirect controls over the behaviour of key variables when in fact none exist; by assuming the absence of monopoly when in fact it is ubiquitous and far-reaching in its effects; by supposing full employment in the long run when in fact it is rather an exception than a rule—in all these ways ... the currently fashionable models abstract not from secondary features of the process that they seek to explain but from its most essential characteristics. Thus they substitute for the capitalist economy an imaginary rational system which has nothing in common with capitalism but the name. The result, it need hardly be said, is an apologetic defence of the *status quo* and this quite apart from the subjective intentions of the model-builders."[1]

The Marxian theory of reproduction considers the process of economic growth as a unity with its technico-economic and socio-economic aspects, with priority being given to the analysis of socio-economic uniformities and historical trends in the development of capitalist mode of production. Marx analysed the process of reproduction, first, as reproduction of capitalist relations of production—the capitalist, on the one side, and the wage-labourer, on the other—and second, as preparation of the material prerequisites for its fall. Consequently, the content of Marx's theory of reproduction is an analysis of the specific uniformities behind the growth of the productive forces under capitalism (the law of the cyclical form of development, the universal law of capitalist accumulation, etc.), which go to aggravate the socio-economic contradictions and which prepare the objective and subjective prerequisites for the fall of capitalism.

But in order to show the substance of capitalist exploitation and to analyse the internal contradictions in the development of capitalism, Marx also considered some of the most important technico-economic uniformities of reproduction, such as the structural proportions in the national economy, expressed in value and in physical terms, their interconnections and factors which determine their change. That is why economic growth theorists in the West find in Marx's theory of reproduction some elements which they themselves analyse (what is more, the development and concretisation of these aspects of Marx's theory of capitalist reproduction is the basis on which the Marxian theory of growth is developed as the theoretical foundation for socialist economic planning). However, this does not provide any ground for identifying Marx's theory of reproduction and the non-Marxian theory of growth. The technico-economic aspects of growth are no more than a part of the whole that is Marx's theory of capitalist development, which analyses technico-economic and socio-economic changes as a unity, in their dialectical interconnection.

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[1] *Marx and Modern Economics*, Ed. by David Horowitz, McGibbon and Kee Ltd., London, 1968, pp. 305-06.

Indeed, some Western economists are aware of the profound distinction between Marx's theory of reproduction and the non-Marxist theory of economic growth. Here is the view of the well-known US economist Lawrence R. Klein, who says: "The methodology of the Marxian approach is quite different from that of Keynes and the Classics: instead of studying the behaviour of individuals, Marx studied the behaviour of classes directly. His theory is probably the origin of macroeconomics. But the Marxian system of macroeconomics differs essentially from the Keynesian and classical systems. The macro-units in the latter systems are producers and consumers, and this overlapping fails to bring out some essentials. The macro-units of the Marxian system are not only producers and consumers but also workers and capitalists."[1]

Some interesting ideas on this score have also been expressed by the Japanese economist Shigeto Tsuru. In an article comparing the Marxian and Keynesian economic systems, he says that the substantial distinctions between Marx and Keynes spring from the nature of the aggregates they use. The parameters of Marx's model are determined by the specifics of capitalism itself, while Keynes has to turn to extra-social generalisations, such as psychology, diminishing returns, and the various features of production techniques. Tsuru says: "Marx's intention was to represent, as simply as possible, the specific interrelation of aggregates which is characteristic of capitalism, ... Keynes has reoriented our attention to the other side of the shield, so to speak, namely, to the simplest functional relation between the demand for various types of goods and the level of total economic activity ... a relation which appears to transcend the specificity of capitalism."[2] Tsuru goes on to emphasise yet another idea: while the Keynesians claim to be votaries of the macroeconomic method, in the final analysis they have to fall back on microeconomics in order to give ultimate theoretical explanation of household and firm behaviour, which determines the movement of the aggregates themselves. The theoretical basis of Keynesian aggregates reduces itself finally to the relation between scarce resources and alternative uses, which actually transcend any specific characteristic of the capitalist mode of production. By contrast, Marxian aggregates, Tsuru says, "appear midway in Marx's theoretical journey from the most abstract discussion of value to the more concrete elucidation of crises and other typically capitalistic phenomena".[1]

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[1] Ibid., p. 154.

[2] Ibid., pp. 193-94.

The hallmark of Marx's system is the search for the social laws of development. "If, however, society, as a subject-matter of scientific endeavour, is a complex of relations qualitatively distinctive on its own level and not simply an amalgam of individuals who compose it or of atomic matter to which all existence may be reduced, it will be wisdom in methodology to presume that social relations are governed by objective laws which are not reducible to psychological and physical laws and which are beyond the reach of introspection, however discerning it may be."[2]

2. The Principal Categories in Marx's Analysis of Reproduction

Three main aspects need to be brought out in Marx's analysis of the mechanism behind the functioning and growth of capitalist production: 1) analysis of the structural *proportions* in the national economy, their interconnection and the factors determining their change; 2) analysis of a number of important structural *coefficients* of the national economy, and the specific features of their movement over the long term; and 3) analysis of the basic *trends* in the relations involving property and distribution which go to sharpen the contradictions between the social character of production and the private form of appropriation.

Consequently, it was Marx who first dealt with the technico-economic aspects of growth connected with an analysis or proportions and coefficients of expanded reproduction and the factors behind their change, and it was also he who brought them together into a coherent scientific system long before any bourgeois theories of economic growth appeared on the scene. But the hallmark of Marx's theory of reproduction is that this analysis of the technico-economic aspects of growth merely constitutes the basis for bringing out the deep-seated contradictions and uniformities of capitalist development which determine its concrete form and prospects.

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[1] Ibid., p. 197.

[2] Ibid., pp. 201-02.

Analysis of macroeconomic proportions, their interconnections and the factors determining their change is an important aspect of Marx's theory of reproduction, and these are the problems which constitute the basis for the well-known schemes of simple and expanded reproduction.

By bringing out the elements which constitute the value of the social product and showing their circuit in the process of expanded reproduction, and furthermore, by dividing the whole social product in its physical form into two departments—the capital goods (I) and the consumer goods (II)—Marx inaugurated the study of the most important technico-economic proportions in expanding production. In Marx's schemes we find both the conditions for static equilibrium—the conditions in which the social product is realised—and the conditions for transition from one state of equilibrium to another. His schemes show which natural proportions must be observed for the products of a given year to be fully realised at a given value and, consequently, with a given distributive structure, and the conditions required for the further expansion of production. These proportions are well known.

For simple reproduction they are: $\mathrm{I}(v + m) = \mathrm{II}c$;
$\mathrm{I}(v + m) + \mathrm{II}(v + m) = \mathrm{II}y$ and $\mathrm{I}(c + \mathrm{II}c) = \mathrm{I}y$.
For expanded reproduction they are:
$\mathrm{I}(v + m) > \mathrm{II}c$; $\mathrm{I}y > (\mathrm{I}c + \mathrm{II}c)$, where
v is variable capital,
m — surplus-value,
c — constant capital, and
y — value of product.

Marx's schemes of expanded reproduction provide a truly scientific basis for studying equilibrium in economic systems. They show to what extent the proportional relation has been maintained between the departments of social production, between production and consumption, and between incomes and expenditures within the framework of the national economy. In this context, some analytical importance attaches to Academician Nemchinov's coefficient of national economic balance, which he formulated on the basis of Marx's schemes, and which shows the relation between the value of the expanded reproduction fund and the expanded reproduction potential (in physical terms):

$B = \frac{(q + z)m}{m}$, $m = \mathrm{I}(v + m) - \mathrm{II}c$, while qm and zm are the shares of the surplus-value of Departments I and II earmarked for accumulation. He writes: "The nearer this indicator to unity, the more balanced the economy. The degree of deviation from unity characterises, where $B < 1$, the extent of underinvestment with underproduction, and where $B > 1$, the extent of overinvestment and overproduction."[1]

In analysing the mechanism of the functioning and growth of capitalist production, Marx used several basic macroeconomic coefficients of reproduction, among them the ratio of constant to variable capital, or the composition of capital (technical, value and organic), the rate of return on invested capital, and the share of wages in the national income.

These categories have the following specific features:

First, they characterise the endogenous structure of capitalist production and connect the movement of transferred value and new produced value, the relations between the main categories of distribution of the new produced value—profit and wages—and capital, and also their relation with each other. The movement of the two departments of social production reflects the connection between the value and the physical structure of reproduction.

Second, these categories reflect in synthetic form the key factors in the development of the economic system: the nature and specifics of technical progress; the condition of the working class and government economic control. Changes in the form and strength of the influence exerted by these factors have a substantial effect on the dynamic of the above-mentioned structural categories.

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[1] S.V.Nemchinov, *Economico-Mathematical Methods and Models*, Sotsekgiz,Moscow, 1965, pp. 100-01 (in Russian).

Third, all these categories are inwardly connected with each other. Changes in the dynamic of one are connected with changes in the dynamic of the rest. The nature of this interconnection reflects the various stages in the development of capitalist production, and the extensive and intensive types of its growth.

Marx gave much attention to the long-term trends in the movement of these categories, and analysed with especial thoroughness the impact of technical progress on the coefficients characterising the relation between constant and variable capital.

Marx analysed this problem on the basis of the movement of the technical $\frac{C}{L}$ and value $\frac{C}{V}$ composition of capital. (Everything that bears on the dynamic of $\frac{C}{V}$ also has a bearing on the dynamic of the capital-product $\frac{C}{Y}$ ratio, where there is no change in $\frac{V}{Y}$, i.e., the share of wages in the national income. Let us bear in mind that the capital-output ratio has an important part to play in all macroeconomic growth models.)

Marx had no doubt at all about the fact that the technical composition of capital, or the capital-labour ratio $\frac{C}{L}$ tended to grow, for that was above all a reflection of technical progress. But what happened here to the value-composition of capital, or the relation between the value of the capital goods and the value of the labour power $\frac{C}{V}$? Did the two change in the same direction or could some discrepancy arise between them?

Marx considers most consistently the instance in which the technical and the value-composition of capital change in the same direction, and this is reflected in his theory of the organic composition of capital and of its growth "in so far as it is determined by its technical composition and mirrors the changes of the latter, the *organic composition* of capital".[1]

An analysis of the assumptions behind his theory shows that the growth of the organic composition of capital results from a type of development under which the capital-labour ratio tends to grow faster than labour productivity. As a result, capital inputs per unit of output tend to increase.

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[1] Karl Marx. *Capital*, Vol. I, p. 574.

The growth of the organic composition of capital (all other conditions being equal) should lead to a growth of the share *C* in the value of the product and, accordingly, to a more rapid growth of Department I of social production. The result of this type of development was most circumstantially demonstrated in Lenin's schemes.

There is good reason why Marx concentrated on analysing the capital-intensive type of development, under which the movement of the value and the technical composition of capital go roughly hand in hand. Statistical analysis shows that in the 19th century and up until the 1920s, this kind of relation was prevalent, as capitalism developed apace and extensively. Industrialisation swept across ever more industries, ousting manual labour, which gave way to machines, while technical progress was most capital-intensive.

But history shows that technical progress can have an effect on the value-composition of capital in yet another way, when labour productivity tends to grow faster than the capital-labour ratio, so that capital inputs per unit of output may decline or remain stable. The trend towards such a decline, signifying capital-saving technical progress, emerged in the 1920s.

Does this mean that Marx's analysis of the impact of technical progress on the value-composition of capital and, through it, on the movement of the two departments of social production is now irrelevant? No, there is no ground for such an assumption. In fact, Marx anticipated the possibility of other ways of development as well. He repeatedly stressed that with the advance of technical progress, the gap between the technical and the value-composition of capital could grow. Here are some of his statements on this score, and they show that he was fully aware of the possibility of discrepancies arising between the technical and the value-composition of capital.

In Volume I of *Capital*, Marx observed: "This diminution in the variable part of capital as compared with the constant, or the altered value-composition of the capital, however, only shows approximately the change in the composition of its material constituents... The reason is simply that, with the increasing productivity of labour, not only does the mass of the means of production consumed by it increase, but their value compared with their mass diminishes. Their value therefore rises absolutely, but not in proportion to their mass. The increase of the difference between constant and variable capital is, therefore, much less than that of the difference between the mass of the means of production into which the constant, and the mass of the labour-power into which the variable, capital is converted. The former difference increases with the latter, but in a smaller degree."[1]

Marx is even more explicit in a statement we find in Volume III: "The difference between the technical composition and the value-composition is manifested in each branch of industry in that the value-relation of the two portions of capital may vary while the technical composition is constant, and the value-relation may remain the same while the technical composition varies. The latter case will, of course, be possible only if the change in the ratio of the employed masses of means of production and labour-power is compensated by a reverse change in their values."[2]

When formulating definite uniformities of development, Marx always regarded these as tendencies which made headway by overcoming counter-tendencies.

The pages of *Capital* we find most meaningful today are those where Marx considers the causes behind the discrepancy between the technical composition and the value-composition of capital under the impact of a growth in labour productivity and a reduction in the product cost, when in one way or another he raises the problem of the changing material-intensiveness of the product under the impact of thrifty use of raw and other materials.

Among the factors which he believed helped to economise on fixed capital and raw and other materials were the growing scale of production, recycling of waste, improvement of machinery (innovation) and advances in the natural sciences. Marx kept emphasising that these economies were a natural outcome of the growing socialisation of production which was in progress under capitalism, i.e., the result of the use of ever more productive machinery, growing concentration of production, ever more extensive co-operation and finer division of labour.

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[1] Karl Marx, *Capital*, Vol. I, p. 584.

[2] Karl Marx, *Capital*, Vol. III, p. 145.

Marx's analysis of the impact of technical progress on the value-composition of capital and, through it, on the value and physical structure of the product is taken as the basis by many Soviet economists in their studies of the problems of growth and the changing structure of the capitalist economy today. Analysis of statistical series over long periods of time has done much to help tackle the problem over the past few years. Whatever the basis for these studies—whether it is the gross social product, including the values of intermediate products, or the final social product—they all suggest the same conclusion: in the 1920s, a new stage opened in the development of the productive forces of the industrial countries, when the growing productivity of labour began to outstrip the capital-labour ratio, and when economies in labour, which always go hand in hand with technical progress, were supplemented with economies in capital inputs, both of fixed capital and raw and other materials. This trend is ever more pronounced with the advance of the scientific and technological revolution, which offers vast potentialities for enhancing social productivity and reducing all types of inputs, both of living and embodied labour. This generates new trends in the correlation between the two departments of social production, with a substantial approximation of growth rates in Departments I and II, and with the growth rate in Department II now and again even outstripping that of Department I.

The changing correlation between growth rates in the two departments of social production is a new phenomenon stemming from scientific and technical progress and the vast growth of socialisation of production. But for all this, Department I continues to be of decisive importance as the basis for national economic growth, technical progress in particular, and it is still true that new and key industries (like chemistry, electric power and electronics) need to have faster growth rates.

Marx gave so much attention to the impact of technical progress on the dynamic of the value-composition of capital because the latter was quite definitely connected with the dynamic of the rate of profit and the share of wages in the national income. The growing organic composition of capital makes for the tendency of the rate of profit to fall (while its absolute mass goes on increasing), and also for the tendency towards a reduction in the working-class share of the national income.

But as we have seen, Marx anticipated the emergence of factors that would counteract the tendency for the value-composition of capital to grow. That is why he did not rule out the emergence of factors hampering the tendency of the rate of return to fall and for the share of wages in the national income to decline, especially in view of the fact that the latter depended not only on technological factors but also on the strength of the working class, the state of its organisation and the scope of its class struggle.

In present-day conditions, the effect of the factors working against the drop in the rate of profit on capital has increased. Statistical studies also show that in the past quarter-century the tendencies against the worsening of the proletariat's condition have become stronger. The working-class movement has built up such strength that in a number of industrial countries the proletariat has succeeded in wresting important concessions in the socio-economic sphere from the monopolies and the governments (higher real wages, a shorter working week, longer holidays with pay, etc.). As a result, the reduction of the working-class share in the national income has slowed down in some countries at various periods. This has also been promoted by the rapid growth of the working class itself as a section of the entire population.

Does this mean that Marx's analysis of the dynamics of capitalism is obsolete? After all, these are the new features on which the critics and enemies of Marxism base their claims that Marx's theory of reproduction as a whole is either outdated or altogether invalid.

The fact is that these critics ignore two important points.

First, the Marxian analysis of reproduction does not at all consist in imposing some given model as a cliché on any technico-economic or historical conditions under which capitalism develops. When considering the basic categories of Marx's analysis of the mechanism underlying the growth of capitalist production, I made a point of stressing that Marx never treated the role and importance of definite tendencies of development as an absolute. While showing the tendencies under definite conditions of development prevalent in his day, Marx invariably stressed the possibility of counter-tendencies arising under different conditions (for instance, in consequence of the capital-intensive type of technical progress giving way to the capital-saving type). Indeed, the Marxian approach is to study the actual processes in the growth of capitalist production by making use of Marx's categories of analysis as instruments.

Second—and this is especially important—Marx never regarded his analysis of long-term tendencies in basic national-economic proportions and coefficients as an end in itself. The fundamental distinction between his approach and that of the bourgeois theorists of growth is that his analysis of the concrete mechanism of capitalist production was for him no more than a prerequisite for bringing out the socio-economic contradictions and tendencies which that mechanism keeps generating.

The changes in the mechanism of capitalist economic growth under the impact of scientific and technical progress, government regulation and the mounting struggle of the working class merely indicates that the mechanism has changed, so that the task before Marxists now is to study the new processes and phenomena which arise in the process of these changes.

Precisely because Marx's theory of capitalist reproduction is a unity of technico-economic and socio-economic analyses, it is not right to reduce it to the specific forms of movement of the above-mentioned macroeconomic categories, as Marx's critics are wont to do. A most important aspect of Marx's theory of capitalist development was the establishment of the place of that socio-economic formation in the historical development of the society and identification of the socio-economic processes which determine the growth of the objective and subjective prerequisites for its collapse, and consequently, for the triumph of the new, socialist system. This meant above all an analysis of the socialisation of production and the specific capitalist forms in which it took place, processes which intensified and sharpened the contradiction between the social character of production and the private form of appropriation and prepared the objective and subjective prerequisites for the transformation of the society on socialist lines. That is the central idea of Marx's theory of capitalist growth, and it has been fully borne out by the present-day development of state-monopoly capitalism.

The changes in the mechanism of capitalist development, manifested in the new tendencies or counter-tendencies, do not invalidate the fundamental law governing this development, a law which was discovered by Marx, namely, the ever greater socialisation of capitalist production, which, as Lenin put it, drags "the capitalists against their will and consciousness, into some sort of new social order, a transitional one from complete free competition to complete socialisation."[1]

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[1] V. I. Lenin, "Imperialism, the Highest Stage of Capitalism", *Collected Works*, Vol. 22, 1964, p. 205.

PART TWO

THE NEOCLASSICAL "REVIVAL"

CHAPTER FIVE

NEOCLASSICAL ANALYSIS OF MACROECONOMIC PROBLEMS

1. Reasons for the Neoclassical "Revival"

The "Keynesian revolution" did not at all signify that the neoclassical schools had been consigned to the history of economic thought.

That the neoclassical schools continued to be a theoretical and methodological basis for bourgeois economics was evident from the interpretation of Keynesian theory as a "theory of equilibrium under less than full employment", as a particular case in the general equilibrium of the economic system, and the attempts to include Keynesianism, on that basis, into the neoclassical system by extending and modernising its interpretation accordingly. Moreover, the 1950s and 1960s witnessed a process which came to be known as the "neoclassical revival" in the course of which the proponents of the neoclassical school substantially modernised its theoretical and analytical apparatus for the purpose of analysing new, macroeconomic problems, especially where Keynesianism had made obvious theoretical mistakes or had caused failures in economic policy.

The revival and development of the neoclassical school was also promoted by the fact that the monopoly bourgeoisie regards the growing government intervention in economic life—propounded by Keynesianism—with mixed feelings. It is quick to co-operate with the government when this holds promise of a stable growth of profits and socio-economic stability in the country; it will accept government intervention if it does not overly curb its immediate interests. But in view of the relative autonomy of the state and the possibility of pressure being exerted on its policies by democratic and progressive forces, government regulation frequently conflicts with the interests of monopoly capital. That is when the monopolies make use of all instruments, including ideological ones, to discredit the idea of government intervention and to vindicate the market and private enterprise. That is the ideology of which the neoclassical school is a reflection.

It is also necessary to bear in mind that government regulation under state-monopoly capitalism is regulation on the basis of private capitalist monopolies and under the full panoply of their power. That is what makes this regulation contradictory and limited. The pursuit of one line of economic policy by the bourgeois government frequently runs into the most acute contradiction with other lines of this policy.

How is it simultaneously to attain such officially proclaimed goals of contemporary government regulation as full employment, price stability, rapid economic growth and balance-of-payments equilibrium, when the measures used by the government to realise these frequently contradict each other?

That is the contradictory problem which every bourgeois government has to face. Its solution is likened to that of the "magic square" (or even polygon) or to the miraculous skill of sailing the ship of the capitalist economy "between the Scylla of inflation and the Charibdis of depression". The contradictory nature of the goals and instruments of government control, especially in the short term, makes it extremely unstable and subject to frequent switches from one extreme to another, so now and again causing additional contradictions and difficulties in the development of the capitalist economy.

The government being incapable of attaining all its goals simultaneously frequently causes the development and deepening of economic disproportions. Thus, government regulation, notably anti-recession policy and economic growth policy resting largely on deficit financing and the policy of "cheap money", did something to develop inflation, which in the 1970s assumed unprecedented proportions. At the same time, while trying to limit inflation, the state finds itself hamstrung in seeking to attain the other goals of its economic policy which call for larger state outlays.

An especially difficult situation took shape in this context during the world economic crisis of 1974-1975, which proceeded and gained in depth against the background of a sharp increase in prices (the same situation was also evident in the United States, even if in not so pronounced a form, during the crisis of 1969-1970).

In the atmosphere of stagflation, regulation of the market conditions through the alternate stimulation (in crisis years) and a restraint (in boom years) of global demand, faced an insoluble problem: all of the traditional measures clearly failed to fit into the new situation. The economic policies pursued by all the countries affected by this phenomenon were characterised by feverish swings between dampers and stimulants. This policy did much to make the exit of the capitalist economy out of that crisis so protracted.

The contradictory goals of economic regulation are compounded by the growing ineffectiveness of the functioning of the administrative machine itself. The timely taking and fulfilment of economic decisions are hampered by the sprawl of the administrative machine, its bureaucratisation and unconcerted action by individual agencies set up to control and regulate individual aspects of economic life. It becomes obvious that the government's participation in the economy, the extent of its "involvement" in economic life are not equivalent to the extent to which the ungoverned operation of the capitalist economy can be contained. The lack of co-ordination and the conflicting activity of government agencies frequently go to amplify the elemental and unplanned economic development of capitalism.

All of this further exacerbates the contradictions between the various groups of the monopoly bourgeoisie and finance capital and of other social groups with respect to government regulation. These contradictions, for their part, provide the nutrient medium for diverse lines of economic thinking propounding different notions concerning the functioning of the capitalist economy, and the significance of government intervention.

The neoclassical revival in bourgeois political economy began somewhere in the mid-1950s and was most manifest in the development of the neoclassical theory of growth and in monetarism, which lays claim to providing a macroeconomic theory alternative to Keynesianism for determining national-income level and a theory of business cycles.

2. The Neoclassical Theory of Growth and the Production Function

The central problems in the neoclassical theory of growth are identical to those which Keynesian theorists formulated and tried to solve. These are, first, the factors which determine potential national-income growth over the long term; and second, the conditions which determine the "steady state" of the economy, in other words, the conditions for dynamic equilibrium, and also the question of how the economy adapts to the "steady state".

The community of problems is an indication that the neoclassical theory of growth emerged with some influence from Keynesianism. Just as the Keynesian theory of growth was shaped on the basis of a critical reworking of Keynes's theory, so the neoclassical theory of growth sprang from the criticism of the limitations of Keynesian growth models.

In order to show this connection, let us briefly review the basic features of Harrod's model.

1. The rate of growth is a function only of one variable—saving ratio. This follows from this growth rate formula: $G = \frac{s}{C_r}$ (where G is growth rate, s—saving ratio, and C_r—the required capital coefficient—marginal capital-product ratio). Because the magnitude of capital coefficient is fixed by technical conditions, the rate of growth G depends entirely on changes in s.

2. Hence, stable and warranted growth rate G_w is determined by the constancy of s and C_r.

According to Harrod, there is no functional connection between s and C_r, as a result of which any rise in s would be compensated by a growth of C_r, and vice versa, so that

G_w would ultimately remain the same; s is determined by psychological factors. C_r is fixed by the technical conditions of production and is determined by the law of neutral technical progress.

According to Harrod's theory, because the dynamics of s and C_r are determined by different factors, there is no mechanism that would automatically restore their balance when it is upset. While a return of C to the level of C_r is brought about by technical progress itself, a return of s to the necessary level can be brought about only by the government through an appropriate budgetary policy.

That is the theory on which the neoclassicists launched a three-pronged attack.

First, increment of social product (or national income) is not only a function of saving. It is a function of the basic factors of production—labour, capital and land—and also of technical progress, which increases the productivity of each of these factors separately.

Second, capital-output ratio is not a magnitude that is strictly fixed by the technical conditions of production. At any given moment, the same volume of output may be obtained by more capital-intensive or more labour-intensive methods, everything depending on the "price" of the factors of production, the latter, for its part, being determined by the relation between supply and demand of the given factor.

Third. But if there is a connection between capital-product ratio and the magnitude of saving ratio (C_r and s, Harrod's formula), it ensures the maintenance of a definite correspondence between them and, consequently, also the tendency towards automatic maintenance of the warranted growth rate. The argument here runs as follows: with a growth of s, which accelerates saving of capital, the price of this factor begins to drop with respect to the price of labour. That is an incentive to use more capital-intensive methods of production. C_r will rise, so that G_w will ultimately remain unchanged. Here, the only condition for automatically maintaining the state of equilibrium is the capacity of monetary policy duly to regulate the interest rate.

Before going on to a more detailed critical analysis of the neoclassical theory of growth, let us consider whether the neoclassical critique, in the specific concepts which it uses, rests on any phenomena in the real process of reproduction ignored by the Keynesian growth model.

Some considerations of this matter suggest the conclusion that in most instances the critique of the Keynesian model is not without good ground.

First, concerning the factors which determine the growth of output. Indeed, in Harrod's model, national-income increment is ensured exclusively by new investment, i.e., by increment of capital. New labour is involved in the process of production only to the extent that investment is made. Because the technical conditions of production are strictly fixed, capital-labour ratio remains unchanged. This model makes no allowance for increment connected with the involvement of additional labour for the available equipment through its greater loading or in consequence of better production engineering. Assuming an invariable capital coefficient, it abstracts from any possible increase in the efficiency of available equipment or the installation of much more efficient new equipment. It makes no allowance for the possibility of choice between more or less capital-intensive techniques of production. In this sense, the urge of the neoclassicists to consider the influence of other factors, apart from saving, on the growth of production is reasonable.

But this question presents itself: perhaps from the standpoint of long-term growth, only one factor may be important, namely, capital increment, because expansion of output for other reasons, without additional investment, is limited and short-term and may be neglected for the long-term aspect? There is a point here, but I still think that the neoclassicists are right in their critique of the Keynesian model, because any growth theory must be oriented not only towards some boundless periods of time, so that every factor, except saving, could be ignored. Theory must show the importance of intensive and extensive factors in the growth of output and within the framework of fully foreseeable periods. Thus, for instance, it is impossible to understand the specifics of postwar economic advance in some capitalist countries of Western Europe, notably the FRG, unless account is taken of the sharp increase in employment and the greater use of facilities alongside growing investment. The growth of employment has had a tremendous influence on the difference in the relation between the rate of saving and output increment between the various developed capitalist countries: countries with a high rate of employment increment, as a rule, require considerably less investment per unit of output increment than countries with a low increment of employment.[1]

Of even greater importance is the growth of employment for economically underdeveloped countries which are very short of investment, but which have vast labour resources. There is good reason why Harrod's "one-factor" model has not been accepted by economists in underdeveloped countries, who have given much more attention to the "multifactor" models of economic growth.

Second, concerning the fixed nature of capital coefficient. This assumption is another weak spot of the Keynesian model. As has already been shown above, statistical analysis over a century shows that the capital-product ratio has indeed remained on the same level, because the upward period ending in the 1920s gave way to a downward period. But these upward and downward periods were much too long for these opposite trends to be ignored and to assert a general tendency of capital coefficient to remain constant. Capital coefficient may rise or fall, depending on the nature of technical progress and structural shifts.

However, another factor of a purely economic nature—wages, or the price of labour-power—is also of much importance. The cheaper the price of labour-power, the more available it is, the fewer incentives there are for installing more productive but more costly equipment. This applies especially to the less developed countries. Conversely, the growth of wages operates as a powerful incentive for applying more capital-intensive techniques.

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[1] In Japan, the FRG and Italy, where postwar growth was paralleled by a rapid increase in the labour force, this relation for the 1949-1959 period came, respectively, to 2.5 per cent, 3.3 per cent and 3.7 per cent, whereas in the United States and Britain, which had lower rates of employment growth, the figures were, respectively, 5.5 and 6.7 per cent. It should be borne in mind that these coefficients were also affected by other factors not mentioned here.

Finally, the third point. The neoclassical critique ends with the thesis that there are causes working for a re-establishment of equilibrium in the economic system between saving and investment, a thesis which cuts across Harrod's conclusions to the effect that the economy is "balanced on a knife-edge" and is inclined to let loose centrifugal forces.

On this question both sides are equally remote from any explanation of the basic causes of instability in capitalist production, because they confine themselves to analysing its technico-economic aspect. The conditions of equilibrium and the causes upsetting it, however, are in fact the point at which the factors determining the growth of production generally must come into contact with the relations of production which determine the contradictions of the capitalist mode of production and the specific forms of its movement. But both the Keynesians and the neoclassicists shun analysis of socio-economic problems. They connect the factors upsetting equilibrium, like the factors restoring it, with natural processes, psychological properties, the law of diminishing returns, and so on. But while Harrod does nothing to analyse the real contradictions, his approach appears to be a more sober one on this matter. His conclusions are more in line with the actual state of things, with the internal instability of the capitalist economic system, which makes government intervention imperative.

Summing up what has been said, one may draw the conclusion that the neoclassical critique of the Keynesian theory of growth has brought out some of its weak points, especially when it comes to the technico-economic aspects of growth.

What have the neoclassicists produced to counter the Keynesian growth model?

They have proposed the use of the neoclassical production function for modelling a growing economy.

In the neoclassical model, fixed capital and labour-power appear as the macroeconomic growth factors capable of being combined in various proportions under the impact of technological and economic causes, and also scientific and technical progress resulting from the influence of science, education and organisation on the rising efficiency of production factors. Let us note that the application of the apparatus of production functions to the analysis of statistical series has helped to obtain a number of interesting quantitative assessments of the role of the individual production factors in the economic growth of various capitalist countries. It showed, in particular, the tremendous contribution to growth rates now being made by scientific and technical progress as a whole and by its individual components. However, neither these calculations nor the fact of the use in them of the production function constitute the substance of the neoclassical theory (just as the simple identity linking up the saving ratio s, growth rate G and capital coefficient C, $s = CG$ does not yet constitute the substance of the Keynesian theory of growth, although this formula does express definite quantitative relations).

The substance of the neoclassical theory of growth is determined by its in-built premises and by the way in which the second group of growth theory problems, namely, those connected with the establishment of dynamic equilibrium, is solved. Let us consider these premises.

The neoclassical production function rests on Say's vulgar theory of growth factors supplemented with the concepts of marginal factor productivity, or their marginal products. Although elements of this theory will be found in the writings of Johann Heinrich Thünen (1783-1850), and later in those of W. Stanley Jevons (1835-1882), it was the US economist John Bates Clark (1847-1938) who put the finishing touches to that theory.

Here are the essentials of this theory. The value of the product is created by three basic factors of production—labour, capital and land. Each of these participates in the process of production, which is why all create value in equal measure. The participation of each factor in creating the value of the product is determined by its marginal productivity, or the magnitude of the marginal product it creates.

The hypothesis of the marginal product is based on the assumption that under given technical conditions an increase in one of the production factors, the magnitude of the others remaining unchanged, will result in a declining increment of output. Here, the marginal product is the increase in output obtained through increasing the quantity of the given factor by one unit, the quantities of all the other factors remaining constant.

The marginal product category is fluid. It depends on changes in the structure of the factors of production and in the relation between their growth rates. Thus, if capital should grow at a faster rate than labour, the marginal product of capital will fall and, conversely, if labour supply increases, the marginal productivity of labour will fall.

According to this theory, the marginal product is the level which determines the "fair" and "natural" level of income paid to each of the factors of production. Where there are no obstacles to free competition, where the relative "prices" of the factors change freely in accordance with their changing marginal productivity, where there is no government intervention or monopolies redistributing incomes, the marginal productivity theory claims that wages, profit and rent will be proportional to the marginal productivity of the corresponding factors.

Consequently, according to this theory, production and distribution have a common basis, namely, a marginal product of the factors of production. The value of the product is the sum total of the product of the quantities of each of the factors of production and its marginal productivity, and these are the same components which functionally determine the share of the factors in the distribution of the social product.

This theory has been clothed in the appropriate mathematical form expressed as the production function, it being assumed that: 1) each of the factors of production is capable of endless division, making possible any combination of them to obtain any given output; and 2) any infinitesimal change in each of the factors entails some change in the total quantity of the product so that there is a functional relation between the value of the product and the factors of its production. That being so, this function may be subjected to differentiation and integration, so that the first partial derivatives of this function will measure the marginal product of each of the factors of production. Assuming further the independence of the factors of production, constant economics of scale, and no influence from technical progress, the value of the product will be expressed in this formula:

$$Y = K\frac{\delta Y}{\delta K} + L\frac{\delta Y}{\delta L} + N\frac{\delta Y}{\delta N},$$

where Y is product value;

K —capital;
L —labour inputs;
N —land;
$\frac{\delta Y}{\delta K}$ —marginal product of capital;
$\frac{\delta Y}{\delta L}$ —marginal product of labour;
$\frac{\delta Y}{\delta N}$ —marginal product of land.

Because land N is assumed to be constant, the final term is equal to zero and is dropped from the analysis.

Consequently, the value of the product is determined as the sum total of the products of the quantity of each factor of production and its marginal product. Meanwhile, the share of each of the factors is functionally determined by its quantity and its marginal productivity.

If the factors are rewarded in accordance with their marginal product, the total product is distributed without any residual, it also being assumed that technical progress increases the productivity of each factor in equal measure, so that it has no influence on the distribution of the value of the product between them.

We have before us, therefore, a theory of the production and distribution of value which appears as the opposite of the Marxian theory of exploitation because in it each factor of production is an autonomous participant in the creation of value and so an equal partner in the sharing of it. The "production" contribution of each of the factors is a natural and "fair" basis for the distribution of the value of the product. Indeed, the main purpose of the theory was to assert this idea, as was frankly stated by John Bates Clark himself when he wrote: "The welfare of the laboring classes depends on whether they get much or little; but their attitude toward other classes—and, therefore, the stability of the social state—depends chiefly on the question, whether the amount that they get, be it large or small, is what they produce. If they create a small amount of wealth and get the whole of it, they may not seek to revolutionise society; but if it were to appear that they produce an ample amount and get only a part of it, many of them would become revolutionaries, and all would have the right to do so. The indictment that hangs over society is that of 'exploiting labour' ... If this charge were proved, every right-minded man should become a socialist; and his zeal in transforming the industrial system would then measure and express his sense of justice."[1]

Some Western economists have also pointed to this fact. The well-known US economist Ben B. Seligman stressed that the theory of marginal productivity was formulated to counter Marx's theory of value: "The turn given to classical doctrine by Karl Marx was distressing. It appeared necessary to rebut such a tendency and it was perhaps toward this end that marginalist doctrine was directed."[2]

However, despite its apparent coherence, the theory has substantial logical flaws. For one thing, it does not in effect prove the main point for which it was designed, i.e., the absence of exploitation.

Assuming a diminishing productivity for each subsequent worker, with capital remaining constant, Clark drew the conclusion that wages would be determined by the amount of the product turned out by the last of the workers to be employed. Consequently, total wages would be expressed as a part of the whole product, the rest being paid out in the form of interest or profit. But Clark's theory does not at all rebut the theory of exploitation. Assuming a diminishing productivity of labour—and that is Clark's premise—one has to conclude, if one is to be consistent, that the whole product is created by labour, and that only that part of it is paid out in wages which corresponds to the lower productivity. On the assumption that the labour of all the workers has the same productivity, it is impossible to explain the origin of income in the form of interest. Consequently, we are faced with two alternatives: a) either the workers' productivity is the same, and then it is impossible to give a residual explanation of interest; b) or the productivity of the individual workers is not the same, and then interest can be explained only as the product of the exploitation of workers.

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[1] John Bates Clark, *The Distribution of Wealth. A Theory of Wages, Interest and Profits*, Macmillan and Co. Ltd., London, 1925, p. 4.

[2] Ben B. Seligman, *Main Currents in Modern Economics...*, pp. 257-58.

The neoclassical theory of production and the theory of distribution based on it also contain another logical contradiction arising from a vulgar and superficial interpretation of the categories with which it operates.

As I have already stressed, the theory of production claims to explain the sources of the value of the product and the law-governed uniformities underlying its distribution, i.e., it claims to explain socio-economic phenomena. But this requires an analysis of production as a socio-economic process, the very approach Marx used in formulating his labour theory of value. Marx set himself the task of showing the origins of surplus-value, and consequently, the place and role of the working class within the system of capitalist production, and for that reason analysed the process of labour itself. He showed that this process is a unity of concrete labour, embodied in a great diversity of use-values, and abstract labour, which creates value, i.e., the substance which has no concrete form and which lies at the source of social wealth, capital, national income, profit, wages and so on. Marx showed that the movement of this substance in effect determines the law-governed processes under capitalism, and that it is at issue in the basic class conflicts. The labour theory of value shows the ultimate source of national and social wealth as a whole: it is human labour, which, because of its two-fold nature, simultaneously creates new value and transfers the old value embodied in the means of production. On this level of abstraction, man and his capacity for work, his capacity to create the goods required for the life of society, should be seen as the only factor of production. This provides a scientific criterion for assessing the socio-economic nature of the social system, the role of the classes which constitute it, and the contradictions which determine its movement.

Now, neoclassical theory considers production as a purely technico-economic process, one leading to the creation of use-value. Because it operates with the factors of production in their purely technical manifestation, it is simply incapable of showing the substance of the law-governed uniformities underlying the production and distribution of value. It starts from the superficial relations of production and distribution. On the surface of social production, the instruments and objects of labour are alienated from the worker, the actual producer. They appear as someone else's property, as capital without which the process of production is impossible. They appear as a separate factor of production which has nothing in common with labour, another one of its factors. The consequent fetishism of the relations of production, which is taken as the initial theoretical postulate, subsequently becomes the basis for the vulgar theory of production and distribution of value, a theory helping to cover up the exploitive substance of capitalism. In this way, "capital" which is, in reality, nothing but embodied human labour, is converted into a special factor of production quite "naturally" laying claim to a share of the product.

The neoclassical theory of production was an advance towards the analysis of the technico-economic relations which determine the creation of the national income as an aggregation of use-values, and that constitutes its rational content.

Factor analysis does not, in effect, deal with value and so with social relations, but with technico-economic relations, so that when considering the role of the individual factors in the creation of the value of the product, there is a need to emphasise that this implies the role of the individual factors in creating or increasing the *aggregate value of the use-values* which make up the national income (or the product of a sector).

From this it follows that the vulgar and apologetic nature of the neoclassical theory of production does not depend on its use of the production function and the apparatus of functional analysis (and with it, inevitably, marginal quantities as well)—for this apparatus serves only as a working instrument—but on its specific premises and its vulgar and apologetic interpretation of the concepts and categories with which it operates.

The production function can be a simple expression of quantitative relations between input and output and which do not have any other qualitative content. Such "engineering" production functions can be constructed for individual types of product (in which case, the function will reflect definite technological specifics of the given line of production) and for the national economy as a whole, with the included parameters being determined on the basis of dynamic series or some other set of indicators. They are used for analysing existing quantitative relations, for determining the role of extensive and intensive factors of growth, and for forecasting.

But the production function used as a mathematical expression of the neoclassical growth theory contains within itself something more than a mere expression of the existing quantitative relations between input and output. It contains an apologetic interpretation of the establishment of economic equilibrium in the capitalist system, which has the following meaning: first, everyone seeking work finds it (i.e., there is full employment), second, the entrepreneurs are satisfied with their rate of return (return equals marginal product), and third: the workers are satisfied with the level of their wages (wage rate equals marginal product of labour). Under equilibrium, there is also an optimal distribution of income: it corresponds to the "contribution" made by the factors of production. Free competition is the mechanism by means of which this equilibrium is established.

Consequently, the neoclassical production function implies and expresses, along with technological relations, certain relations of distribution under full employment of economic resources, i.e., with the full loading of production capacities and full employment.

Just as the neoclassical theory of production is simultaneously a theory of distribution, so the neoclassical production function is simultaneously an income distribution model. That is what makes it a vulgar and apologetic theory seeking to indicate—on the strength of technico-economic laws of production—the justice of the existing distribution of income.

The theoretical premises behind the production function and all the subsequent conclusions concerning the conditions of dynamic equilibrium constitute the substance of the neoclassical theory of growth.

The initial premises of the neoclassical production function as an economic growth model were formulated by Robert Solow and W. Swann, and boiled down to the following main propositions:

1. There are two production factors—labour and capital—which are homogeneous in nature and which produce a homogeneous product, with labour (labour-power) increasing at a constant rate.
2. Free competition prevails as a result of which the production factors are rewarded in accordance with their marginal products, i.e., wages are equal to the marginal product of labour, and profit (interest) is equal to the marginal product of capital. That is why the distribution of income is simultaneously an expression of the production contribution by each of the factors to the value of the product.
3. The full employment of all the resources is ensured by free competition and the unhampered intersubstitution of labour and capital, and also the freely moving prices of the production factors in accordance with the dynamic of labour and capital.
4. The whole unconsumed part of the product, i.e., saving is invested. There is no problem of demand.
5. The growing scale of production has no influence on rising efficiency; factor productivity under constant conditions of production tends to diminish.
6. Technical progress is neutral and autonomous, equally raising the efficiency of all the factors of production.
7. The elasticity of production-factor substitution is equal to unity; in other words, changes in the relation between profit and wages cause exactly the same changes in the relation between labour and capital, and vice versa. For that reason, there is no change in income distribution.
8. This premise, for its part, is connected with the notion of capital homogeneity, for it appears as a uniform "malleable", jelly mass capable of flexibly responding to changes in the relations between production-factor prices.

Here, premises 2-4 are among the general premises of neoclassical theory and characterise the so-called "conditions of entrepreneurial equilibrium" which ensure the mechanism of free competition that takes care of any difficulties in marketing.

The other four premises (5-8) mainly formalise the specific features of technical progress which warrant its definition as a *neutral* type of technical progress since it does no more than raise the general efficiency of the factors, without altering the relations between them.

Even a cursory look at these premises, which constitute the basis of the neoclassical growth model, suggests the conclusion that they are a far cry from the realities, from the actual conditions of the capitalist economy today.

The subsequent development of neoclassical theory has involved some amendments and complexifications of the premises of analysis seeking to reckon with some of the actual aspects of economic growth. In this context, one could note two new basic lines in the evolution of the neoclassical theory of economic growth. One of these is connected with the introduction into the analysis of the monetary factor as a key element of the economic system helping to explain the emergence of economic fluctuations despite the fact that the system strains for a "steady state". This line led to the emergence of the monetarist theory of national income formation and of the cycle in contrast to Keynesian theory.

The second line involves alteration of the premises concerning the characteristics of technical progress and its impact on economic growth.

The introduction of the monetary factor into the theory and also the elaboration of mathematical formalism for analysing technical progress had a number of positive aspects which were of definite importance for an understanding of individual processes in capitalist reproduction.

But another point also needs to be stressed. The evolution and modernisation of neoclassical theory have not in any way affected the group of premises which I described as the "conditions for entrepreneurial equilibrium" (premises 2-4 above). Let me add that these premises have long since been under attack by bourgeois economists themselves, ranging from the works of Joan Robinson and Edward H. Chamberlin on monopolistic and imperfect competition to the emergence and development of Keynesianism. Nevertheless, it is these premises that still constitute the basis of neoclassical growth models.

If one draws a distinction in neoclassical analysis between these two aspects: analysis of supply, or the aspect of production, and analysis of the mechanism by means of which the economy adapts to the changes in supply (the squaring of demand and supply), one will find that only the first aspect has been affected by the basic corrections. As for the adaptation mechanism, it has, in effect, remained the same: free competition and the movement of relative prices (frequently with the aid of monetary policy) bring demand into correspondence with supply.

It is for all these reasons that the neoclassical theory of growth, despite all the complexifications and corrections in the course of its further evolution, continues to be a long way from analysing the paramount aspects of actual capitalist reproduction.

3. The Neoclassical Model of Dynamic Equilibrium

The proponents of the neoclassical theory of growth, as I said above, have criticised the Keynesians for their conception of disequilibrium dynamics, which is used as a basis for drawing conclusions concerning the need for government intervention in the economy.

In the neoclassical model, which implies free competition and the operation of the laws of marginal productivity, the problem of deviation from the state of equilibrium is non-existent. In other words, whenever there are discrepancies between actual, natural and warranted growth rates, processes tend to arise which automatically re-establish equilibrium. On the strength of this, conclusions are drawn to the effect that government regulation should be confined to eliminating the obstacles hampering free competition and pursuing monetary policy regulating interest rate. There is special emphasis on curbing the rights of the trade unions (which are regarded as monopolies) in their struggle for higher wages.

Let us consider the dynamic equilibrium model formulated by the British economist Professor James E. Meade.[1]

Meade believes the following to be the main conditions for stable economic growth rates: 1) substitution elasticity is equal to unity; 2) technical progress is neutral with respect to all the factors; and 3) the share of savings from the income of all the three factors is constant.

The first condition for a balanced and stable growth rate, according to the neoclassical theory of growth, is that the distribution of income between labour and capital remains constant, i.e., the share of profit and the share of wages in the national income do not change and this, in turn, implies a free change in the relation of factor "prices" (i.e., of wages and profits) in accordance with the changing relations between their growth rates.

Meade and other advocates of the factor theory connect the idea of neutral technical progress with national income distribution: neutral technical progress leaves this distribution unchanged. In this case, it is assumed that technical progress affects the marginal productivity of each factor in the same way. If, as a result of this or that "deviation" of technical progress, the marginal productivity of labour or capital shows a greater increase, the share of wages or of profits in the national income will increase accordingly.

Thus, both of the initial conditions ultimately signify the same thing: constant national income distribution is the condition for a stable rate of growth.

The latter condition—constant shares of savings in every category of income—requires no special explanation and merely means that the sum total of savings in the national income is constant.

In these conditions, Meade asserts, on the assumption that population growth rate and technical progress are constant, the growth rate in total output will always seek to move to some given constant level constituting a state of steady economic growth.[2]

Meade starts from a modernised version of the Cobb-Douglas production function, which includes the time factor characterising qualitative changes in the economy brought together under the general head of technical progress (this type of production function will be examined in greater detail in the next chapter). Following a number of mathematical transformations, and with definite premises, this function helps to express the national income growth rate as the sum total of the growth rate of the basic factors of production weighted by their national income shares, plus an independent rate of technical progress. That is,

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[1] James E. Meade, *A Neoclassical Theory of Economic Growth*, London, 1961.

[2] Ibid., p. 29.

$$y = \alpha k + \beta l + r,$$

where y is annual average rate of national income growth;
k —annual average rate of capital growth;
l —annual average rate of labour growth;
α and β —respectively, the national income shares of capital and labour; and
r —rate of technical progress.

On the strength of this formula, and assuming that l and r, are constant, Meade draws the conclusion that constancy of y would be achieved in the event the rate of capital growth was also constant, and, besides, equal to the rate of national income growth. In other words, his conclusion is that stability of national income growth in the conditions formulated above would take place if its rate of growth was equal to the rate of growth of capital stock. Meade calls this the critical level of national income growth rate.

What happens if the actual rate of growth of capital stock should exceed this "critical level" in virtue of the society's greater propensity to invest? In this case, under the conditions formulated above, a mechanism is set in motion which automatically reduces the rate of capital growth. Thus, according to the formulated conditions, the share of savings in income is constant, the increment of savings necessary to ensure a higher rate of capital growth begins to lag behind the latter, so acting as a constraint. The reverse would happen if the rate of capital growth turned out to be lower than the rate of national income growth.

But what happens if the rate of labour growth exceeds the rate of capital growth? In that event, because of the reduction in the marginal productivity of labour, a mechanism is set in motion to substitute capital for labour and the new combination of production factors (with their income shares remaining constant) would ensure full employment.

This model of stable growth is acceptable, as Meade himself says, for abstract economic conditions, in which the laws of marginal productivity operate, and where the factors of production may be combined in any proportion because of the corresponding changes in their marginal productivity. However, Meade goes on to raise the following questions: if in the real economy the factors of production cannot be combined in any proportion, if the laws of marginal productivity do not operate, what kind of conditions in the economic system would ensure the same results as under the operation of the laws of marginal productivity?

Meade does not see any connection between a surplus or shortage of labour, which tends to arise in reality, and the contradictions of capitalist production. He merely connects it with the fixed nature of the technical proportions (the rigidly fixed amount of capital per output unit, i.e., capital-output ratio, or the rigidly fixed amount of capital per worker, capital-labour ratio). In this context, the growth of the able-bodied population, unless it goes hand in hand with a corresponding increase in capital, would not result in an increase in output and the whole population increment would be redundant. Unemployment would appear.

Conversely, i.e., if capital grew faster than the population, excess productive capacity would appear. Thus, the distorted reflection of the actual processes in capitalist reproduction springs from the defective initial methodology, when it is not the actual relations of production in the capitalist society but merely the technico-economic conditions that are taken as the basis. According to Meade, either idle capacity or unemployment may result because the proportions are fixed. But in reality, these phenomena are concomitant, for they have one and the same cause, namely, the contradictions of capitalist production, which produce the "coexistence" of idle capital, on the one hand, and redundant labour, on the other.

But let us follow Meade's logic. Is there any way in these conditions to achieve equilibrium, in other words, is there any way to eliminate unemployment or idle capacity?

Meade says: "In these conditions there remains one mechanism in the economic system which might bring the natural and the warranted rates of growth into line with each other even though there were a technically rigidly fixed ratio between the amount of machinery and the level of output (or between the amount of machinery and the amount of labour in employment). An equilibrating mechanism might work through the effects of the relative supplies of labour and of machinery upon the distribution of the national income between profits and wages, and thus upon the proportion of the national income which is saved, and thus upon the warranted rate of growth itself."[1]

If unemployment arises, Meade says, in conditions of free competition (including the absence of resistance from the trade unions) and with a wise monetary policy, two instruments will operate to work it off. The first is competition between the workers, which will tend to depress wages and increase the rate of return and, consequently, the income of the capitalist class. The redistribution of income in favour of the capitalist class will result in a growth of savings, an increase in the rate of savings, thereby restoring the equilibrium between population growth and the rate of saving.

The second instrument is some change in the proportion of labour and capital, which is, in reality, not absolutely rigid, although these two factors are not absolutely capable of mutual substitution either. These changes, for their part, will result from a change in the price of the factors of production, i.e., a reduction or an increase in wages relative to the movement of return on capital.

In any case, what is implied is a redistribution of the national income as the equilibrating mechanism.

For its part, the mechanism of distribution will play its role in equilibrating the natural and the warranted growth rates only if the share of savings from profit is higher and the share of savings from wages is lower than the rate of savings in the national income as a whole which is required for attaining the critical level of savings.

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[1] James E. Meade, Op. cit., p. 48.

Thus, replying to the question about the conditions ensuring an equilibration of warranted and natural growth rates in reality, Meade reaches conclusions which are directly opposite to those which follow from his analysis of equilibrium under the classical scheme. Changes in the distribution of income between labour and capital, provided that the share of savings from profit is higher than that of savings from wages, constitute the mechanism which is to help fill the gap between the two rates of growth. This is a repetition in a new form of the pre-Keynesian recipe for the blight of unemployment, i.e., an unhampered decrease in wages, an old recipe Meade backs up with the unconditional demand for a monetary policy that would have an effect on the rate of saving by manipulating the interest rate.

No wonder Meade's neoclassical model leaves the government with only an indirect stabilising role. According to the neoclassicists, the government, with its unlimited growth of expenditures, is a destabilising factor. The whole theory is designed to prove that steady growth does not require compensatory activity by the government, with its inflationary expenditures, as Keynes and his followers had believed, but a stable monetary system backed up with the central bank's monetary policy. That, they claim, will set in motion the income-redistribution mechanism, which allegedly works best to ensure the full employment of resources and stable growth of the national income.

Some authors, like Meade, imply, and others state more explicitly that there is yet another key prerequisite for the operation of this system, namely, the absence of strong trade unions, which prevent the free movement of wages, including the possibility of unlimited competition between workers and between capitalists.

What has been said suggests the conclusion that, compared with the Keynesians, the neoclassicists have taken a step back in terms of understanding the mechanism behind the movement of capitalist production. This is evidenced above all by their total neglect of the problem of realisation, whose advance to the fore in bourgeois economics is undoubtedly something the Keynesians should be credited with. The problem of instability is dealt with in terms of costs and a combination of factors which yield the maximum profit at minimum cost. But practice shows that minimum costs, specifically, wage cuts, ultimately turn out to have an unfavourable result for capitalism, for they depress consumer demand and worsen the conditions of realisation.

Furthermore, the Keynesians also understood one other thing: today, it is no longer possible to start by assuming the existence or the possibility of re-establishing a flexible price system. Nor can one expect the trade unions to go away. The inflexibility of the price system, the difficulties arising from direct methods of wage reduction and also the recognition of wages as a component of "effective demand", all of this led Keynes and his followers to draw a conclusion that was least painful in social terms, namely that the general conditions for the growth of capitalist production could be ensured only by means of government regulation of expenditures.

The attempt to solve the problem of equilibrium by ignoring the problem of realisation is the weakest spot in the neoclassical theory of growth. Characteristically, in contrast to the theorist Meade, practitioners having to do with statistical analysis are keenly aware of the shortcomings of the models and the corresponding forecasts based on a study of the factors of production. These models can explain the potential level of output, but say absolutely nothing about the conditions of realisation. They show the potentialities of production but not the conditions on which the employment of all these potentialities depends and, consequently, the actual level of output which, under capitalism, can markedly deviate from the potential.

4. The Monetarist Theory of Economic Instability

The neoclassical models of economic growth turned out to be much too abstract an instrument for analysing a vibrant problem like that of the business cycle. Besides, the cycle was increasingly laced with chronic inflation. There was a need for a theory that, while asserting the existence of internal trends towards the stability of the capitalist economy, would explain the real complexities of capitalist reproduction. That is precisely the kind of theory that was offered by *monetarism*, a trend based on the premises of the neoclassical school but concentrating attention on monetary sphere analysis.

In contrast to the Keynesians, the monetarists' main assumption is that the market economy has a capacity for self-regulation. They claim that manipulation of effective demand by the government merely tends to upset the market mechanism and to engender inflation. That is why they believe that there is a need to limit government expenditures and other forms of direct and indirect government intervention in the economy, and to concentrate attention on controlling the growth of money supply.

The monetarists have also come up with their own theory of the business cycle. Let us add that it is not as elaborate as the Keynesian theory of the cycle, and is sooner a response to Keynesian theory rather than a consummate and independent concept of cyclical development. Nevertheless, some of its specific features can be considered on the strength of the available writings.

The present-day monetarist theory of the cycle is based on statistical studies and theoretical generalisations by the US economist Milton Friedman. We can trace several stages of its development involving criticism of the basic propositions of Keynesian theory.

Friedman first sharply criticised Keynes's consumption function and multiplier effect back in the late 1950s.

When considering the main components of the Keynesian theory of the cycle in Chapter Two, I showed that the consumption function and the multiplier were crucial to that theory. Since the consumption increment is regarded as a stable function of income increment, and since in the subsequent period only a definite and stable share of the latter is consumed, this leads to a gradual slowdown in the growth of the total volume of consumption and also of income as a whole. That is the formal interconnection on which the cyclical dynamic of national income rests.

In his effort to prove that the economic system is more stable while the dynamic of consumption does not reveal such a close connection with income growth (or reduction), Friedman countered with his theory of permanent, constant income. In his view, a sizeable part of consumption is not determined by changes in the level of income (its growth or reduction), but by a "permanent" and stable income which is habitual for the participants in the economic process and which is determined by factors like interest rate, the wealth-income ratio, and the extent to which current consumption is preferred to future consumption. That is why consumption dynamic, according to his theory, is much more stable and only partially depends on current income increment: "It means that a much larger part of current consumption is interpreted as autonomous and a much smaller part as dependent on current income and hence, through the multiplier process, on investment. The result is a smaller investment multiplier, and an inherently cyclically more stable system."[1]

Having made short work of the consumption function and the multiplier, Friedman also sharply criticised another Keynesian idea: that investment was the basis of cyclical fluctuations. He did this in his subsequent works on statistical analysis of the dynamic of money supply in the history of the United States and its influence on cyclical development, with the entire study aimed to prove the following thesis: it was not the fluctuation of investment but changes in money supply that were the cause of the cycle. This idea was reinforced by a number of studies on the history of the currency of money in the United States.[2] Considering the movement of money supply (with the use of various sets of indicators, in particular, cash + bank demand deposits + time and saving deposits in commercial banks), Friedman and Schwartz reached the conclusion that it had a cyclical form (and an especially clear one if one eliminated the trend and analysed the fluctuations in the rates of growth). Such an analysis did not, of course, contain anything unexpected to undermine the earlier notions of the nature of the cycle. But on that basis Friedman strove to prove that it was the movement of money supply and not the "real factors" that operated as the prime cause of the cycle. A number of arguments were presented to assert this view.

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[1] Milton Friedman, *A Theory of the Consumption Function*, Princeton University Press, Princeton, 1957, p. 238.

[2] Milton Friedman and Anna J. Schwartz, *A Monetary History of the United States, 1867-1960*, Princeton University Press, Princeton, 1963; idem., "Money and Business Cycles", *The Review of Economics and Statistics*, February 1963.

It was said, for instance, that the movement of the money supply had an explicitly leading character as compared with the other economic indicators, on the basis of which the US National Bureau of Economic Research considered the dynamic of the cycle. But this argument can hardly be regarded as sufficiently convincing, because the US statistical service makes use of many leading indicators which appear to signal a break in the economic situation. But that does not yet warrant the assertion that the causes of the cycle will be found in the movement of these indicators.

Friedman and Schwartz also referred to the coefficients of correlation between money supply and national income, on the one hand, and investment, consumption and national income, on the other. These coefficients show that the correlation between the movement of money supply in circulation and the national income dynamic was higher than that between autonomous government spending, investment and income.

However, in the subsequent period, calculations were made public by US economists presenting the opposite results. Besides, in the close connection between the two phenomena, correlation cannot serve as evidence of a cause-and-effect relation. One could claim, with greater certitude, that the movement of money supply was itself determined by the cyclical fluctuation of national income. Besides, Friedman and Schwartz admitted that their analysis was not sufficiently correct, and in one of their articles we find a significant reservation. Having formulated their conclusions on the basis of correlation calculations, the authors added: "These results may, of course, be misleading, because some crucial variables have been neglected, or because the definition used for autonomous expenditures is inappropriate, or for some other reasons."[1] Nevertheless, they claimed that it was the dynamic of money supply that was autonomous and primary, and that "if the consistent relation between money and income is not pure coincidence, it must reflect an influence running from money to business".[2]

Finally, the monetary origins of the cycle were backed up with the following argument: there were no sharp drops in autonomous investments in the course of the crises they considered (1873-1879, 1892-1894, 1920-1921, 1929-1933, and 1937-1938). There was no "collapse", although "in most or all of these contractions, the incentive to invest and the actual amount spent on investment declined".[3] Consequently, there is no doubt about the fact that investments contracted, but since there was no "sharp collapse" they assert that it was not the fluctuation of investment but a fluctuation in money supply that was the cause of the cycle. But is there a need for a "sharp collapse" of investment for the origination of a crisis? The Keynesian multiplier and accelerator theory shows how small fluctuations in investment build up into stronger fluctuations of income and vice versa, thereby generating the cyclical process (see 2, this Chapter).

Besides, the authors are themselves let down by this logic: after all, Friedman does not at all make sharp fluctuations in money supply the condition for this theory of the cycle. He says that these fluctuations are transmitted to income also through the multiplier, by means of which weak fluctuations in money supply are transformed into stronger fluctuations of national income.

Friedman holds that there are only two mutually exclusive prime causes of cyclical dynamics: either investment or the amount of money in circulation. From this it follows that if you cannot explain the given phenomenon on the strength of the investment dynamic, it has to be explained on the strength of the money dynamic.

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[1] Milton Friedman, Anna J. Schwartz, "Money and Business Cycles", Op.cit., p. 48.

[2] Ibid., p. 50.

[3] Ibid., p. 54.

In actual fact, it is futile to look for the prime causes of the cycle in its own mechanism, of which investment and monetary processes are both elements.

In the course of the cycle, there is always an interaction between real and money factors, so that both the Keynesians and the monetarists, by setting up either of these factors as an absolute, tend to produce a distorted picture of the whole mechanism of the cycle (to say nothing of its real origins, which are rooted in the contradictions of capitalist reproduction).

Let us consider the main elements of the monetarist view of the cycle, as these stand out in Friedman's numerous works and the relevant discussions, and compare them with Keynesian theory.

1. As I have already said, against investment and consumption—these "real" factors of the Keynesian model—the monetarists range the money factor which, they believe, has the crucial role to play in the movement of the national income and the shaping of the cycle. Here they attach much importance to the discrepancy between money supply and money demand.

2. In contrast to Keynesian theory, in which the function of money demand is unstable and is subject to the influence of speculative motives, the monetarists assign prime importance to the stability of this function as determined by the stable propensity to save for the purpose of attaining the desired level of wealth.

Hence, this cardinal conclusion for monetarist theory: the stability of the function of money demand means that if the economy is to function normally, there is a need for a steady increase in money supply.

3. If money demand is a stable function of a series of fundamental economic variables, money supply, by contrast, is extremely unstable and depends on the policies pursued by the monetary institutions concerned. Whereas Keynesian theory did not attach much importance to the instability of money supply, the monetarists insist that the gap between money supply and demand for money, the instability of money supply is the starting point for cyclical fluctuations in the economy.

4. The monetarists also take a different view from the Keynesians of the mechanism by means of which changes

in money supply have en effect on the movement of the national income. Keynes considered this influence only through the change in interest rate, which, for its part, may change the level of investment and, through it, the volume of the national income. (The well-known chain $M \rightarrow r \rightarrow I \rightarrow Y$, in which, besides, as I said above, the first two elements $M \rightarrow r$, i.e., the influence of money supply on interest rate, and $r \rightarrow I$, i.e., the influence of changes in interest rate on investment, were regarded as unreliable, while the ultimate object of this chain, Y, i.e., the national income, appeared simultaneously in a real and a nominal expression). For the monetarists, a change in money supply (quantity of money) necessarily has an influence on the level of nominal income, being partially transformed into a growth of prices, and partially into a growth of real income.

At this point, Friedman's theory differs not only from Keynesian theory, but also from the earlier quantity theory of money, which assumed that all changes in money supply were "absorbed" by price changes, leaving the level of real output constant. Friedman believes that Keynesian theory, assuming inflexibility of prices, and the quantity theory, assuming inflexibility of production, are equally unrealistic extremes in the explanation of the problem. He says: "Neither theoretical model has anything to say about the factors that determine the proportions in which a change in nominal income will, in the short run, be divided between price change and output change. One theory *asserts* that the change in nominal income will all be absorbed by price change; the other, that it will all be absorbed by quantity change. In my opinion, this is the central common defect of the two approaches as theories of short-run change."[1]

5. How is a change in money supply distributed between price change and real income change? Monetarist theory has failed to give a complete answer to this fundamental question bearing on the causes of inflation. Friedman regards two factors which determine the distribution of the effect of increased money supply between price

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[1] Milton Friedman, "A Theoretical Framework for Monetary Analysis", *Journal of Political Economy*, No. 2, 1970, p. 222.

increase and real income increase. There is, first, the relation between the current level of production and the level which corresponds to full employment. The closer the economy is to the state of full employment, i.e., to the full employment of resources, the greater the effect an increase in the money supply will have in stimulating price growth instead of national income increase. Here, Friedman has not gone so very far beyond Keynes. Let us recall that the latter also assumed that the higher the level of employment, the greater the probability that the growth of money expenditure would lead to a rise in prices instead of a growth of real income (Keynes believed that the process of "true inflation" starts at the point of full employment). Second, there is the expected behaviour of prices. In the conditions of developing inflation, for instance, the expectations of the further growth of prices will, Friedman believes, sooner convert the growth of money supply into a further growth of prices that promote the growth of real income.

The new element here is the emphasis on the role of inflationary (or, conversely, deflationary) expectations. But the latter, while truly having a tremendous effect on development and the self-sustenance of the inflationary process, are still of a secondary character. Consequently, for the monetarists, it is the growth of money supply (stock) that is the main objective cause of inflation, while all the other factors—and above all monopoly price-formation practices—remain beyond the framework of analysis.

6. The final element of the monetarist theory of the cycle is the process in which the demand for money adapts to the changed business activity and price level under the influence of changes in money stock. Milton Friedman asserts that this adaptation necessarily transcends the state of equilibrium: "It will not simply produce a smooth movement to the new path consistent with the new rate of growth of the money stock."[1]

In the process of this adaptation, money demand is bound to outstrip the growth (or decline) of money supply. These "excesses" (overshooting) originate for subjective reasons. The holders of diverse assets, according to monetarist theory, do not evaluate these assets on the strength of the real movement of prices, but of the lower (or higher) prices which had existed earlier. As a result, they always tend to overestimate (or underestimate) their real value. That is why money demand for goods and other assets also turns out to be either higher or lower than it should be. "The tendency to overshoot means that the dynamic process of transition from one equilibrium path to another involves a cyclical adjustment process."[1]

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[1] *The Review of Economics and Statistics*, Supplement, No. 1, Part 2, February 1963, p. 62.

Any change in money supply, as compared with money demand, must cause cyclical reactions in the economy, says Friedman, and claims that this is the basic reason for which the capitalist economy tends to develop cyclically.

Marx once said that "The superficiality of Political Economy shows itself in the fact that it looks upon the expansion and contraction of credit, which is a mere symptom of the periodic changes of the industrial cycle, as their cause."[2]

Such notions of the nature of cyclical fluctuations are the basis for the well-known conclusions that money supply should be the main parameter for any stabilisation policy. Economic policy should be reoriented from "irresponsible" Keynesian recipes for business cycle policy, which result in sharp fluctuations of the money stock, to a stringent regulation of money supply, regardless of the economic outlook. Economic policy must switch from the unattainable principle of "fine tuning"to the realistic "rule", according to which money supply should increase by 3-4 per cent a year, i.e., in accordance with the long-term rate of national income growth.

7. The monetarist national income model allows for cyclical fluctuations caused by upheavals in money supply. But it totally rules out the possibility of protracted equilibrium disruptions stemming from the organic properties of the capitalist economic system. "All sorts of frictions and rigidities may interfere with the attainment of a hypothetical long-run equilibrium position at full employ-

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[1] Ibid., p. 62.

[2] Karl Marx, *Capital*, Vol. I, p. 593.

ment; dynamic changes in technology, resources, and social and economic institutions may continually change the characteristics of that equilibrium position; but there is no fundamental 'flaw in the price system' that makes unemployment the natural outcome of a fully operative market mechanism."[1]

In a subsequent theoretical work analysing the dynamic equilibrium of nominal income, Friedman tried to prove that steady equilibrium was possible even with a growth of prices. This model is designed to reflect at least to some extent the features of the inflationary economy which are so typical for present-day capitalism. But on the whole, it is so abstract, the spectrum of behavioural functions and parameters used in it has been narrowed down to such an extent (the money income dynamic is explained by the discrepancy between expected and real interest rate) that its actual importance for an understanding of the mechanism of economic growth and inflation is on the whole totally negligible.

Consequently, the discussion which the appearance of monetarist theory sparked off in the bourgeois economics, in effect, failed to indicate the ways for a deeper understanding of cyclical development. It did, of course, increase attention to the substantial role of the factors of money in the advance of inflationary processes, but it diverted analysis from the deeply imbedded law-governed processes in the development of capitalist production, without which it is superficial and futile to analyse either cycle or inflation.

The "crop of ideas" in the sphere of economic policy proved to be even scantier, because the internal causes of cyclical fluctuations of capitalist production and the rapid rise of prices cannot be eliminated either by means of the traditional macroeconomic instruments of regulation, to which Keynesians look (elements of aggregate demand), nor by means of monetary instruments advocated by the monetarists. This was exemplified by the postwar experience in government regulation of economic activity in the capitalist countries.

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[1] Milton Friedman, "A Theoretical Framework for Monetary Analysis", Op. cit., p. 207.

At the same time, the Keynesian-monetarist discussion left a marked imprint on the general evolution of bourgeois theories.

First, it intensified the processes of neoclassical synthesis in bourgeois economics, including theories of the business cycle; it stimulated fresh attempts to combine the two approaches—the Keynesian and the neoclassical—for a more realistic explanation of the nature of the cycle and inflation.

Second, it provided an inducement for a review of the orthodox Keynesian model of the cycle (indeed, of the whole income-expenditure theory) and a "new reading" of Keynes's theory.

Goncerning the former trend, many participants in this discussion believe that there is no unbridgeable gap between the two theories—the Keynesian income-expenditure theory and the quantity theory of money—and that their main features are compatible (Franco Modigliani, Martin J. Bailey, among others). Thus, post-Keynesians now admit that the absence of monetary factors in the Keynesian model of the cycle is among its essential shortcomings. Professor Hyman P. Minsky of the University of California, says: "The working hypothesis should take the form of a model that integrates a more complete monetary and financial system into an income-expenditure framework, in particular, financial commitments along with financial assets should be integrated into the various behaviour equations."[1]

At the same time, many proponents of monetarist theory also want to see its one-sidedness to be overcome and the more general, "synthetic model" elaborated.

Faced with sharp criticism of his theory, Friedman subsequently moderated his anti-Keynesian ardour. Thus, in a 1970 work, *A Theoretical Framework for Monetary Analysis*, he emphasised in his conclusion that the divergencies between economists of various schools were empirical rather than theoretical, and that there were differences of accent, priority, and evaluation, rather than of substance. In a subsequent work, *A Monetary Theory*

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[1] *The Review of Economics and Statistics. Supplement,* No. 1, Part 2, February 1963, p. 67.

of Nominal Income (1971), he set forth the key elements of this theory, with special reservation for a number of propositions used before him by Keynes and Fischer. In conclusion, Friedman says that "none of the three simple theories—the simple quantity theory, the simple income-expenditure theory, the simple monetary theory of nominal income— professes to be a complete, fully worked out, analysis of short-term fluctuations in aggregate economic magnitudes. All are to be interpreted, rather, as frameworks for such analysis establishing the broad categories within which further elaborations will proceed."[1]

But fairly acute discussions have continued to this day in the formation of concrete economic policy. The monetarists' suggestion that it should be confined to monetary policy providing for a stable rate of increase in money supply and leaving all the other problems to be remedied by the "animating" forces of the capitalist organism itself has not met with approval either on the part of government or government-adviser circles, which have to take concrete measures against the grave effects of the actual cyclical development of the capitalist economy. These measures inevitably boil down to the use of fiscal and monetary policies, because the government simply has no other instruments of regulation at its disposal.

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[1] *Journal of Political Economy*, Vol. 72, No. 2, March/April 1971, p. 332.

CHAPTER SIX

PRODUCTION FUNCTIONS AND ANALYSIS OF ECONOMIC GROWTH FACTORS

1. Premise for Using the Production Function for Quantitative Analysis

The use of production functions stimulated a series of studies for a quantitative evaluation of the role of the individual economic growth factors in ensuring potentially possible output, or national income, and the rate of their growth.

That is why when criticising the theoretical principles of the neoclassical production function, there is a need carefully to sort out the actual technico-economic interconnections that could be analysed by means of "engineering" production functions and the economic growth processes these could help to study. Assuming the existence of a definite quantitative relation between the level of national income (or output) and the volume of labour and capital resources employed, we believe that it is possible—with definite realistic assumptions—to express this relation in the form of a production function and to use the corresponding mathematical formalism of functional analysis for a quantitative determination of some interrelations in production. Marginal magnitudes have an important role to play in such an analysis, for the influence of each of the production factors on the growth of output can be determined from the individual outputs derived from the increment of each factor while the rest remain stable (marginal-product indicators). This helps to find out the commensurate production effect in the substitution of one factor by another, in the choice of various alternative combinations of them, i.e., the choice of more capital-intensive or more labour-intensive ways of economic development.

Consequently, the production function has a real meaning (within the framework of the accepted constraints), if it is regarded as a model reflecting the quantitative participation of the individual factors of production in the creation of use-value aggregate. But it is irrational if one ascribes to it qualitative characteristics of the production process as the process of the creation of value and surplus-value and their distribution.

But even when the production functions are used for a quantitative measurement of the influence exerted by the individual production factors on the volume and rate of output growth, a number of complicated methodic problems tend to arise.

Is it at all right to use the apparatus of functional analysis in economics? How is one to select the form of functional relations? How is one to determine the parameters of the function and, most importantly, what is their economic meaning?

Among the necessary premises for functional analysis are complete independence of growth factors, their substitutability, the possibility of an accretion of one factor with others remaining constant, and so on. Frequently, there are objections to this method of isolating the individual factors for a quantitative evaluation of their role in increasing output on the ground that in the creation of use-values all the factors are involved together—and are, in this sense, complementary—so that it cannot be asserted that one part of the product has been created by means of labour, another by means of capital, and so on. But no one will draw such an absurd conclusion. The point is to have a method of scientific abstraction that would help to separate the influence of one factor from that of the others, and to measure it. There is here an analogy with the analysis of value elements: in the value of the commodity we bring out the transferred value and the newly created value, although in the process of production the creation of new value and the transfer of the old is a coherent process, and it is impossible to say that one part of the product is an embodiment of transferred value, and the other—of newly created value.

The complexity of the problem consists in selecting the type of production function to describe actually existing interconnections and in defining its parameters. Let me add that this problem is also compounded by the following perfectly real contradiction: the simpler the functional relation by means of which the actually existing interconnection is expressed, the easier it is to use for concrete statistical computations and concrete statistical analysis. At the same time, the simpler the premises underlying the analysis, the greater the danger of losing touch with the actual processes going on in production, and the greater the need for circumspection in evaluating the results of the analysis. Conversely, the more fully the type of production function reflects the whole complexity of production interconnections, the more difficult it is to operate with it for real statistical computations, and— however paradoxical this may seem—the lesser the practical value of such a production function.

This contradiction is visualised by contemporary bourgeois writings on this question. Formal analysis involving the selection of the type of production function has gone a long way: it has been converted into something of an exercise in "art for art's sake". Meanwhile, statistical analysis has, as a rule, been based on the simplest types of production function.

The type of production function most widely used in theoretical and statistical analysis is the Cobb-Douglas function.

In 1928, the US economist Paul H. Douglas, assisted by the mathematician Charles W. Cobb, made the first attempt to define empirically the influence of capital and labour inputs on output in the US manufacturing industry for the purpose of verifying whether statistical analysis could confirm the existence of marginal productivity laws.[1]

In his analysis, Douglas used three indexes reflecting the dynamics of fixed capital, the number of man-hours, and the volume of output in US manufacturing from 1899 to 1922. He set himself these three tasks:

1. To find a formula giving the most precise descrip-

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[1] See: Paul H. Douglas, *The Theory of Wages*, The Macmillan Company, New York, 1934.

tion of the relation between output growth, on the one hand, and the growth of labour and capital inputs, on the other.

2. To find the parameters of this formula.

3. To compare the indicators obtained on the basis of the formula with actual output growth, and to determine the extent to which computed output approximates to actual one.

All the mathematical computations were performed by Cobb, with the following premises:

a) output is a function of only two factors—labour and capital—which are capable of unhampered substitutability;

b) returns on each unit of labour and capital are constants;

c) labour and capital-intensiveness are constant;

d) the relation is linear, i.e., if both factors increase *m* times, output also increases *m* times. In other words, if there is no change in the labour-capital relation, if the capital-labour ratio remains constant, output increases only to the extent that both production factors increase. This premise suggests that returns, or production-factor efficiency, do not depend on the scale of production (constant returns of scale).

In accordance with these terms, a $Y=AK^{\alpha}L^{\beta}$ type function was selected, where A,α and β are the parameters of the function. Here A is the proportionality coefficient, while α and β are indicators characterising the influence of each factor on output, or the elasticity coefficients for labour and capital inputs. The parameters α and β of the function were obtained by the method of least squares, it being stipulated that $\alpha + \beta = 1$. The magnitude of A turned out to be equal to 1.01, that of α—0.25, and that of β—0.75, so that the whole function assumed this form:

$$Y' = 1.01K^{0.25}\,L^{0.75}.$$

A comparison of the actual production index with the computed index showed that the latter reflected the general trend in the dynamics of production. The deviations were connected mainly with the fact that the obtained function did not reflect the growth or decline in production caused by an increase or decrease in the employment of fixed capital (production capacity).

The Cobb-Douglas analysis had two important consequences.

First, for all the advocates of the neoclassical theory of production, their empirical estimates of the function parameters a and β appeared to confirm the reality of the postulates of their theory. The point is that, assuming that the "prices" of the production factors, i.e., profit and wages, were equal to their marginal products (as the neoclassical theory of production assumed), and designating the marginal products themselves as partial derivatives of the function for labour and capital, a and β in the function $Y=AK^{a}L^{\beta}$ (it being assumed that $a+\beta=1$) could be measured as the shares of capital and labour in the national income. Let us designate profit and wages respectively as P and W. Then:

$$P=\frac{\delta Y}{\delta K}=a\frac{Y}{K};\ a=\frac{PK}{Y},$$

i.e., a is the share of capital in income.

$$W=\frac{\delta Y}{\delta L}=\beta\frac{Y}{L};\ \beta=\frac{WL}{Y}.$$

Consequently, β is the share of labour in income. In bourgeois statistics, these shares are usually computed as being around 0.25 and 0.75. The parameters a and β, computed in this case by the method of least squares, turned out to be of the same magnitude.

These coefficients were so "convenient" and fitted the neoclassical hypotheses so well that the indexes for national income distribution were henceforth used without much hesitation in many studies, especially at the initial stages of factor analysis—as indicators of income (or output) elasticity for labour and capital.

Second, while the Cobb-Douglas function was static, reflecting an optimal input-output combination, it generated a series of papers on the quantitative evaluation of the role of individual economic growth factors. The prerequisite for such research was the formulation of modernised versions of the Cobb-Douglas function, which took account of technical progress. But before considering the line of further evaluation of production functions, let us take a closer look at the economic content of the Cobb-Douglas function:

$$Y = AK^{\alpha}L^{\beta}.$$

Y is here a power function of two independent but interrelated variables: inputs of capital K and labour L; α and β are, respectively, the parameters of the function.

After the function is subjected to a number of mathematical operations (logarithmication and subsequent differentiation), it may be expressed in terms of growth rate: $y = \alpha k + \beta l$ where y, k and l are, respectively, the growth rates for output (income), capital and labour. This formula gives a visual demonstration of the fact that α and β are coefficients of income elasticity for labour and capital, with α showing the number of percentage points by which output would rise when capital increased by 1 per cent, provided the second factor was fixed, and β under the same terms, indicating the extent to which output would increase when labour increased by 1 per cent. The sum of the coefficients shows the number of percentage points by which output would increase when the factors were simultaneously increased by 1 per cent.

The sum of the parameters may or may not be equal to unity. If $\alpha + \beta = 1$, this means that, given a simultaneous increase of each factor by 1 per cent, output will also increase by 1 per cent. This is a prerequisite for the linear homogeneity of the function implying constant returns of scale. If $\alpha + \beta > 1$ or < 1, this means that there are some other elements working to increase or decrease the factor "reward" in consequence of an increase in the scale of production itself.

The importance of the function parameters α and β is not confined to the fact that they help to assess the role of each factor of production in output growth. They also determine a number of other important categories in the analysis of production interrelations. They help to obtain the marginal product indicators, or productivity in the use of each factor. These indicators show the extent to which the function (output or income) will change with changes in one of the factors, provided the others remain constant. If function $Y = AK^{\alpha}L^{\beta}$ is differentiated for K and L, we shall obtain the corresponding indicators for marginal product of capital and marginal product of labour:

$$\frac{\delta Y}{\delta K} = a\frac{Y}{K}; \ \frac{\delta Y}{\delta L} = \beta\frac{Y}{L}.$$

Consequently, coefficients a and β characterise the relation between marginal and average factor productivity.

The concept of marginal products and their statistical evaluations are used in solving the problem of factor substitution and computation of marginal substitution rate. Where the increment of a small quantity of capital compensates for a reduction in the output from a corresponding reduction in labour inputs, it is possible, with the use of marginal productivity formulas, to obtain the following equation:

$$dK\frac{\delta Y}{\delta K} = -\frac{\delta Y}{\delta L}\cdot dL \text{ or } a\frac{Y}{K}\cdot dK = -\beta\frac{Y}{L}\cdot dL,$$

$$\text{hence } \frac{dK}{dL} = -\frac{\beta}{a}\cdot\frac{K}{L}\cdot\frac{dK}{dL}$$

is the coefficient of the marginal rate of substitution of one resource for another. It shows how many units of capital are required to substitute for a unit of labour input to obtain the same output. The formula shows that for the given capital-labour ratio it is determined by the function parameter ratio $\frac{\beta}{a}$.

The concept of the elasticity of substitution is also an important category of analysis. It is defined as the ratio of the substitution rate of one factor for another to the rate of change in their marginal products. Designating the annual average rate of growth as E with the corresponding index, the elasticity of substitution will be expressed by the following formula:

$$\delta = \frac{E_k - E_l}{E\frac{\delta Y}{\delta L} - E\frac{\delta Y}{\delta K}}.$$

The elasticity of substitution is an important technico-economic concept showing the relation between the change in the rate of increment of labour and capital, on the one hand, and of their marginal products, on the other. If the elasticity of substitution is equal to unity, this means that the reduction in the marginal product of capital with respect to the marginal product of labour is exactly equal to the increment of capital, as compared with the increment of labour.

If the elasticity of substitution is greater than unity, this change in the increment-rate ratio of the marginal products of capital and labour involves larger changes in the rate of capital increment as compared with that of labour.

The proponents of the neoclassical theory of production assume that the marginal products of labour and capital are proportional to their prices. That is why they define the elasticity of substitution as the relation between the rate of growth of the capital-labour ratio and the change in the profit-growth rate E_p and wages E_w or

$$\delta = \frac{E_k - E_l}{E_w - E_p} .$$

It is hard to accept this view of the elasticity of substitution. Neither wages nor profit make it possible to measure the marginal products of the production factors. However, there is certainly a relation between the movement of the real "prices" of production factors and their employment in production. A rising level of wages is an inducement for substituting past for living labour, for increasing the capital-labour ratio. Conversely, the relative cheapness of labour power is an obstacle to technical progress. The selection of more or less capital-intensive production techniques frequently depends on the level of wages. Of course, this relation is not direct, as neoclassical theory assumes. Nor is it linear; it is manifested as a trend. But it does exist, which is why the study of the elasticity of substitution in its real sense is fully justified.

In the neoclassical theory of growth, the value of the elasticity of substitution is now of much importance in selecting the form of production function.

The point is that the value of the elasticity of substitution determines whether the production function is to have constant or variable parameters. If the elasticity of substitution is equal to unity, the parameters of the production function α and β remain constant, in which case use is made of the Cobb-Douglas function, which was considered above.

If the elasticity of substitution is not equal to unity, the production function must be based on the premise of changing parameters α and β and its form will be different. This type of production function has been worked out by well-known US economists K. J. Arrow, H. B. Chenery, B.S. Minhas and R.M. Solow, who published their findings in 1961.[1] They assumed that the elasticity of substitution was not equal to unity, and verified their assumption by means of statistical analysis.

They also characterised the elasticity of substitution as a magnitude showing the relation between the rate of labour productivity growth and wage growth. In their statistical analysis, they used data for 24 manufacturing industries in 19 countries. The results of regression analysis showed that only in 2 out of 24 cases was the elasticity of substitution approximating to 1. In the other 22 cases, it was less than 1 (but closer to 1 than to 0). Starting from these empirical results, they derived a new type of production function which came to be designated as constant elasticity substitution (CES) function.

The Cobb-Douglas function also has constant elasticity of substitution (equal to unity), but it is only a specific case of this more general production function, because in the latter, the elasticity of substitution is not necessarily equal to unity. In practice, this means that the coefficients characterising the influence of production factors on output α and β are not constant and that the share of output imputed to each also changes with time. If, for instance, the elasticity of substitution is less than unity, the share of the more rapidly growing factor in the national product tends to decrease, and vice versa.

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[1] K. J. Arrow, H. B. Chenery, B. S. Minhas, and R. M. Solow, "Capital-Labour Substitution and Economic Efficiency", *The Review of Economics and Statistics*, August 1961.

Many econometrists are now engaged in analysing the elasticity of substitution. But are their conclusions of essential importance for analysing the problems of growth? There is no consensus on this point. Some assume that the substitution elasticity problem is important for three spheres of analysis: 1) economic growth stability; 2) influence of a changing supply of production factors on their relative prices; and 3) distribution.

The US economist Zvi Griliches asserts that "from the point of view of production function estimation and the analysis of sources of productivity growth, the elasticity of substitution is a second-order parameter".[1] He has produced computations to show that even a halving of the elasticity of substitution has an altogether insignificant effect on the overall rate of growth.

Consideration of the categories of economic analysis relating to the production function shows the important role of parameters α and β, since on the mode of their evaluation on their level, and on their interpretation ultimately depend the results of the whole analysis.

We have seen that Cobb and Douglas arrived at an evaluation of these parameters empirically, using the method of least squares and establishing on the basis of actual data the statistical links between output and input of labour and capital. This approach appears to be the most realistic one, even if it does involve a number of other technical and methodological complexities. However, Cobb and Douglas interpreted the results of their analysis in the spirit of the vulgar neoclassical theory of production, thereby creating a situation in which many Western economists use national income distribution indicators as parameters α and β, or, at any rate, rely on these in their research.

This happens to be the most vulnerable aspect of the production function used by bourgeois economists in their quantitative analysis of production interrelations. The point is that the hypothesis that marginal products are proportional to production factor "prices" and the consequent possibility of using national income distribution indicators as function parameters (elasticity coefficients) holds good only for the optimal production model with extremely abstract assumptions and rigid limitations concerning the reality. This model implies the homogeneity of labour and capital, the same levels of wages and profits and, finally, perfect competition, under which nothing hampers the relative changes in prices.

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[1] Zvi Griliches, "Production Functions in Manufacturing: Some Preliminary Results". In: *The Theory and Empirical Analysis of Production*, National Bureau of Economic Research, New York-London, 1967, p. 285.

However, these assumptions, especially the perfect competition model, are too far a cry from the reality to warrant the assumption that production factor "prices" and their marginal products are instantly equalised. Considerable deviations of the actual level of profit and wages from the level dictated by optimisation stem from the waste of economic resources, unemployment, chronic underuse of capacity, the domination of monopolies and an "administered" price system, and the unionisation of the working class.

Let us note that more and more bourgeois economists are dissatisfied with this way of determining the function parameters, for they are aware of the limitations or, rather, the unreality of the premises in selecting the coefficients in this way. Here are a few characteristic statements in this context made at a conference of the Organisation for Economic Cooperation and Development in Paris in 1964.

The well-known Swedish economist Erik Lundberg criticised one paper chiefly because it was based on the assumptions of the marginal productivity theory. He said: "The relative importance of input-factors (the weights) is given by the shares in national income... The great explanatory importance that Denison can attribute to education, in fact, depends on the big share of labour income, 70-75 per cent. The low share of capital, 20-25 per cent, gives this factor its subordinate position and instead permits more room for the residual. We all know the unrealistic assumptions underlying this type of production function analysis (such as assumption about competition, substitution elasticities, constant returns to scale). It is the comparative static method approach, disregarding the fact that our economics are currently far from having equilibrium positions."[1]

Professor Robert R. Nield observed: "This scepticism found expression mainly in criticisms of the calculations and the proposed methods of calculation presented to the conference. The main calculations were based on the hypothesis that the price of each 'factor of production' measures its net marginal contribution to the social product."[2]

Having shown the content of the parameters of the Cobb-Douglas function, we now need to deal specially with the constraints this function implies.

Above I said that in the Cobb-Douglas production function, the factors of production—labour and capital—can be combined in any proportion and, consequently, can substitute each other without limit for producing a unit of output. Thus, technological coefficients—capital-labour ratio, capital-output ratio and labour productivity—may change in consequence of different rates of production factor growth, or in consequence of one factor being substituted for (or economised by) another. At the same time, the rates of factor substitution in the Cobb-Douglas function are strictly fixed and interrelated. The amount of labour per unit of output depends on the capital-output ratio, and vice versa.

Although the Cobb-Douglas production function does not exclude the possibility of change in technological and capital coefficients, it does require that the change should take place within the framework of constant conditions. This means an artificial narrowing down of the potentialities of technical progress. Here, the coefficient values are strictly functionally related, i.e., the fixing of one coefficient simultaneously means the fixing of the other. This dependence is but the transfer to subsequent periods of the concrete conditions in which labour and capital move in earlier periods.

The fixed nature of the parameters is one of the important constraints imposed on the analysis of real processes by this form of production function. But it appears that up to a point this cannot be an obstacle to the use of the production function. Any model implies the stability of some parameters. The stability of these parameters is no bar to the use of the function here being considered for short-term forecasting, because their changes are connected with very large shifts in the technology of production and labour skills and cannot be sudden.

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[1] Erik Lundberg, "Comments on Mr. Edward F. Denison's Paper". In: *The Residual Factor and Economic Growth*, Paris, 1964, pp. 68-69.

[2] Robert R. Nield, "Summary of the Discussion", Op. cit., p. 271.

Substantial importance is also attached to another constraint which is connected with the assumption that the distribution parameters equal to unity $\alpha + \beta = 1$. This equation means that proportional accretion of labour and capital goes hand in hand with a proportional increment of output. This condition means that if both factors increase by 1 per cent, output likewise increases by 1 per cent. If the proportion in the growth of the two factors is upset, i.e., if the rate of growth of one factor exceeds that of the other, the increase in output will be less than the rate of growth of the faster growing factor. From this it follows that in the event of growth of capital-labour ratio (capital grows faster than the labour applied) the rate of output growth will turn out to be smaller than that of capital growth, and we shall have a tendency for the capital-output ratio to increase. In its classical form, the Cobb-Douglas function is, consequently, applicable only to historical conditions in which technical progress is capital-intensive, while the growth of capital-labour ratio is not accompanied with growing economies of capital sufficient to compensate for this tendency.

However, since the 1920s, the tendency towards a lower capital-output ratio has been the prevailing one in the developed capitalist countries. This tendency shows that technical progress can assume forms in which an increase in the capital-labour ratio will be accompanied with the growth of labour productivity or with economies in the means of production inducing a decline in the capital-output ratio. This fact turned out to be sufficiently important to warrant a review of the initial assumptions in the Cobb-Douglas production function.

2. Dynamisation of the Cobb-Douglas Function and Evaluation of Technical Progress

The Cobb-Douglas production function was modernised along two lines, one involving the abandonment of the assumption that the sum of the elasticity coefficients was equal to unity (abandonment of the assumption of constant efficiency regardless of scale).

With $\alpha + \beta = 1$ we have the original type of production function with constant efficiency of production factors. However, if $\alpha + \beta > 1$, this means a rising efficiency of production factors, and, conversely, if $\alpha + \beta < 1$, a falling efficiency of production factors.

Let us add that Douglas himself was aware of the limitations of his initial formula and accepted the suggestion by the mathematician David Durand that he should operate with a more general formula in which the sum of the coefficients could, or could not be, equal to unity.

The second line along which the Cobb-Douglas production function was improved involved consideration of the influence of technical progress as an independent factor, as a third variable exerting an influence on national income growth. Accordingly, the time factor was introduced into the Cobb-Douglas production function to reflect the shift in the static production function to new levels under the impact of a whole set of qualitative changes brought together in a package under the head of "technical progress". This was first done in 1942 by the well-known Dutch economist Jan Tinbergen, who introduced the time factor e^{rt}, or the trend indicator, into the linear homogeneous type of Cobb-Douglas formula (the sum of the coefficients is equal to unity).

$$Y = AK^{\alpha}L^{1 - \alpha}e^{rt}.$$

"Thus", he wrote, "we take into account the possibility of an increasing (perhaps also decreasing) effectiveness of the production process in time and we have the possibility of including the element of technical development in our model."[1] Explaining the concept of "technical progress", he wrote: "An increase in labour productivity may be obtained by two different means. Firstly, the production function can remain unchanged and the capital intensity of production can be increased. Secondly, we can also change the production function, in other words, obtain a higher volume of production with the same volume of labour and capital... Such an increase in labour productivity will, however, always be accompanied by a corresponding decrease of capital productivity; we have here the process of mechanisation, the replacement of labour by capital. In addition we have the simultaneous increase of both labour productivity and capital productivity, which may be called rise in efficiency. The latter will occur if e^{rt} in our formula increases."[1]

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[1] Jan Tinbergen, *Selected Papers*, North-Holland Publication Co., Amsterdam, 1959, p. 193.

Logarithmical differentiation of this function produces a corresponding expression in terms of annual growth rate.

$$y = a\,k + (1 - a)\,l + r,$$

where y is output (or income) growth rate;
k – capital growth rate;
l – labour growth rate; and
r – rate of aggregate productivity growth.

It is this type of production function (and its modifications) that was broadly used by US economists in the 1950s to evaluate the role of individual growth factors, notably the importance of technical progress.

In order to understand the meaning and conventional character of the evaluations so obtained, one should bear in mind these two specific features underlying such evaluations.

First. When the Cobb-Douglas dynamic function is used, two types of influences on output (or its growth index) are isolated: quantitative influences connected with the change in volumes of the factors of production applied (labour and capital) which determine the change in the function itself (movement along graph) and qualitative influence which determine the shift of the function. These two types of influences in this function are not connected with each other. The magnitude y may increase both as a result of changes in l or k or the two taken together, and also as a result of changes in r, which raises the whole function to a new level. Indicator r appears to concentrate all the qualitative changes occurring in the economy as a result of technological advances, higher levels of knowledge, rising labour skills and improved production engineering, but not with the growth of capital input. The indicator r characterises so-called disembodied technical progress. In Western writings it has been given diverse designations, the most widespread being the rate of technical progress or technological change.[1]

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[1] Ibid., pp. 193-94.

It should be borne in mind that the content of the term "technical progress" differs somewhat from the conventional meaning of technical progress as advancing mechanisation of labour involving a growth of capital-labour ratio, on the one hand, and changes in production technology, on the other. In this case, "technical progress" is taken in a narrower sense because it does not include the substitution of past for living labour. At the same time, it is broader than the conventional one because, apart from technological changes, it also covers all the other qualitative improvements in the economy: advance of education, improvement of organisation and management, growing scale of production, and so on.

Consequently, r is a peculiar complex indicator of the growing economic efficiency of all production factors that are not connected with the growth of capital and labour. It is not surprising, therefore, that the analysis of economic efficiency, measurement of the consequences of technological change in the economy, input of so-called disembodied capital, and so on, are largely connected in present-day bourgeois economic statistical studies with measurement and analysis of this very indicator.

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[1] Indicator r also has many other names, including "output per unit of input", or "efficiency index" (Jacob Schmookler), "total factor productivity", or "change in productive efficiency" (John W. Kendrick); "technical change" (Robert M. Solow); and even "measure of our ignorance" (Moses Abramovitz). Having gone over all these terms and, apparently, not being satisfied with any of them, E. D. Domar suggested the term "residual", although he is now and again inclined to call it "index of technological change" (E. D. Domar, "On the Measurement of Technological Change", *The Economic Journal*, The Quarterly Journal of the Royal Economic Society, Vol. LXXI, No. 284, December, 1961., p. 709.

The second specific feature of these evaluations consists in the fact that indicators of national income distribution are taken as function parameters. Above I already remarked on the extremely tentative nature of this approach in evaluating the function parameters in the context of the vulgar factor-of-production theory.

The first interesting computations on the basis of the Cobb-Douglas dynamic function were obtained by Tinbergen.

On the basis of data for 1870-1914 on the dynamic of capital, employment and output for four countries—Germany, Great Britain, France and the United States—Tinbergen obtained the following results (taking the shares of capital and labour in the national income—respectively, 1/4 and 3/4—as his parameters a and $(1-a)$: in Germany, extensive factors, i.e., increased inputs of labour and capital ensured 60 per cent of growth, and technical progress—40 per cent; in Great Britain, extensive factors ensured 80 per cent of growth, technical progress only 20 per cent; in the United States, respectively, 73 per cent and 27 per cent.

For the period selected by Tinbergen, a period of mainly extensive growth of production in the leading capitalist countries, evaluations of the role of technical progress were much less important than the extensive factors of growth—labour and capital.

In the 1950s, works by several US economists, notably Robert M. Solow, John W. Kendrick and Edward F. Denison, gave a fresh impetus to the analysis of growth factors on the basis of the Cobb-Douglas dynamic function. Examining US economic development from roughly the beginning of the 1920s, they reached the conclusion that technical progress sharply boosting the efficiency of national economic inputs became the decisive factor of economic growth. Their computations bore out the fact that at the present stage in the development of capitalist production, technical progress in the broad sense of the word, including innovations and improvements, growing skills and education, and better production engineering, i.e., all the qualitative changes in the economy which largely result from "non-investment" inputs (outlays on science, education, etc.) acquire ever greater importance for economic growth.

Let us take a closer look at some of these works.

Solow's computations. In the United States, the Cobb-Douglas function was dynamised (on the same principle as Tinbergen's) by the well-known economist Robert M. Solow. Making use of the formula $y = ak + (1 - a)\,l + r$ and taking as his statistical indicators: a) the gross national product in constant prices in the private sector, excluding agriculture (according to Kendrick); b) the volume of capital, less durables in the public sector, in agriculture and among the population (according to Goldsmith); and c) an indicator of the share of profit in the national income equal to 35 per cent, Solow reached the following conclusions concerning the rate of "technical change" in the United States from 1909 to 1949. From 1909 to 1929, the rate was 0.9 per cent, and from 1930 to 1949, it increased to 2.25 per cent. Even if the year 1929 were moved from the first period to the second—the year marked a sharp drop in the rate because of the crisis—a sizable difference still remained: 1.2 per cent in the first period, and 1.9 per cent in the second. Over the entire span of 40 years, according to Solow's computations, technical change averaged 1.5 per cent a year.

Solow then went on to examine labour productivity as a function of growth of capital-labour ratio and technical progress, and reached the conclusion that almost 12.5 per cent of the whole labour productivity increment (GNP per man-hour) was attributable over the 40-year period to increased use of capital, and 87.5 per cent to "technical change".[1]

Kendrick's computations. Solow's method of evaluating technical change does not differ fundamentally from the method used by the well-known US statistician John W. Kendrick to calculate aggregate productivity. Solow himself writes about the common aspects of the two methods: "Not only does the usual choice of weights for computing an aggregate resource-input involve something analogous to my assumption of competitive factor markets, but in addition the criterion output: a weighted sum of inputs would seem tacitly to assume (a) that technical change is neutral and (b) that the aggregate production function is strictly linear. This explains why numerical results are so closely parallel for the two methods."[1] Both methods essentially start from similar assumptions, the differences nearly bearing on the choice of final computation formula and the data on which the computation is based.

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[1] Robert M. Solow, "Technical Change and the Aggregate Production Function", *The Review of Economics and Statistics*, Vol. XXXIX, No. 3, August 1957, p. 317.

In his work,[2] Kendrick says that his evaluations of aggregate productivity are based on the productive function, according to which output is determined by input and efficiency of its employment. This efficiency, or factor productivity, cannot be directly measured. It is measured indirectly as the ratio of the real product-to-factor inputs, without consideration of any change in their quality or efficiency. Kendrick compares the actual real output of period II with what the output of the factors would have been in period II had factor efficiency remained the same (as in period I). In order to evaluate the growth rate for aggregate productivity r, he uses an equation in which this rate is equal to the sum of the growth rates of labour productivity and output-capital ratio, weighted respectively by the share of wages and profits in the national income.

Using the designations given above in analysing Solow's function, this formula will be as follows:

$$r = ay_k + (1 - a)\, y_l\,,$$

where r is rate of aggregate productivity growth;

y_k – rate of output-capital ratio growth;

y_l – rate of labour productivity growth;

a and $1-a$ are the shares of profit and wages in the national income.

It will be easily demonstrated that this formula can be obtained on the strength of the one used by Tinbergen and Solow in their analysis, i.e.,

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[1] Ibid.

[2] John W. Kendrick, *Productivity Trends in the United States*, New York, 1961, p. 11.

$$y = r + ak + (1 - a)\, l.$$

If y_l and y_k are growth rates for labour productivity and output-capital ratio, then $y_k = y - l$ and $y_l = y - k$. Consequently, $l = y - y_k$ and $k = y - y_l$.

Substituting these expressions in the preceding equation:

$$y = r + a\,(y - y_k) + (1 - a)\,(y - y_l) = r + ay - ay_k +$$

$$+ y - ay - y_l + ay_l.$$

Hence

$$r = ay_k + (1 - a)\, y_l.$$

As a result, we obtain the formula for aggregate productivity growth rate used by Kendrick.

Below is a table characterising the result of Kendrick's computations for a longer period than Solow's, and on the basis of somewhat different data.

Table 2

Private Domestic Economy: Growth Rates in Real Product and Productivity Ratios, 1889-1957 (average annual percentage rates of change)

Years	Real Gross Product	Real Gross Product per Unit of			Real Gross Product per Man-hour (unweighted)
		Total Factor Input	Labour Input	Capital Input	
1889-1957	3.5	1.7	2.0	1.0	2.4
1889-1919	3.9	1.3	1.6	0.5	2.0
1919-1957	3.1	2.1	2.3	1.3	2.6

Source: John W. Kendrick, *Productivity Trends in the United States*, p. 60.

On the strength of these calculations, labour productivity growth was connected with rising aggregate productivity, or factor efficiency: for the whole 1889-1957 period by 70.8 per cent, including the 1889-1919 period by 65 per cent, and the 1919-1957 period by 80.8 per cent.

The share of aggregate productivity growth rate in the growth rates for real gross product was, respectively, 50 per cent, 33 per cent and 68 per cent. These figures show a marked increase in the efficiency growth rate beginning from the 1920s, and a considerable increase in the "contribution" of aggregate productivity to the overall growth rate for labour productivity and national income as a whole.

These are the data calculated by the Norwegian economist Odd Aukrust on the basis of the same principles for a shorter period and for a larger number of countries.

Table 3 shows that in the developed capitalist countries, technical progress in the postwar period accounted for between one-half to two-thirds of the average annual Gross Domestic Product growth rate.

All these discoveries initially left a big impression. However, they at once raised the following question: which factors determine the technical progress indicator itself and to what extent? The latter is a complex indicator and its changes result from the influence of a multiplicity

Table 3

Aggregate Economic Growth Indicators (Annual Average Rates from 1949 to 1959)

Country	Period	GDP	Extensive factors (labour and capital)	Intensive factors (technical progress)	Share of technical progress
Britain	1949-1959	2.5	1.3	1.2	48.0
FRG	1950-1959	7.5	2.9	4.6	61.3
Norway	1949-1959	3.7	1.4	2.3	62.2
Belgium	1949-1959	3.0	0.9	2.1	70.0
Italy	1949-1959	6.1	1.8	4.3	70.5
France	1949-1959	4.5	1.2	3.3	73.3
Sweden	1949-1959	3.4	0.9	2.5	73.5

Source: Odd Aukrust, "Factors of Economic Development. A Review of Recent Research", *Productivity Measurement Review*, No. 10, February 1965, p. 19.

of diverse factors, including technological change, rising educational and labour skill levels, improved management and production engineering, higher efficiency resulting from the enlargement of production, and specialisation and co-operation.

But to what extent does each of these determine the technical progress indicator?

The answer called for fresh approaches and new methods of quantitative analysis, above all, in disaggregating the technical progress indicator.

The first and most elaborate attempt to disaggregate the technical progress indicator was made by the US economist Edward F. Denison.[1] Although there is much in his work that is contrived and controversial, the results of his evaluations have attracted attention. For one thing, his technical progress indicator is free of the factors connected with improvements in the quality of labour as a result of growing education and labour skill levels. By means of a series of tentative calculations, Denison reached the conclusion that from 1929 to 1957, this factor accounted for 23 per cent of total national income growth. Let us note that this is only four points less than the growth of labour inputs corrected for shorter working hours and the speed-up. For all the tentative character of his assumptions and computations, the conclusion is, on the whole, highly noteworthy. He used it to show the great importance of further advance of knowledge as a way of increasing potential growth rate.

Having increased through this factor the general labour-input index, Denison eventually reached the conclusion that technical progress (in the narrow sense of the term) accounted for roughly 30 per cent of the national income growth rate.[2]

Denison also tries to bring out and determine the influence of the various subfactors on productivity growth. He is quite naturally aware of the complexity of the task, and says: "This is exceedingly difficult, an almost unlimited number of forces or conditions may influence productivity, and no single approach serves for the examination of them all. It is impossible to subdivide among individual sources the part of the increase in national product that I ascribe to rising productivity as objectively as the part ascribed to increased inputs. Qualitative judgements are unavoidable."[1] Among the multiplicity of influences which cannot be directly (or indirectly) assessed in qualitative terms, Denison brings out a group of factors which, he says, fall under the head of factor inputs. These are enterprise, material incentives for labour, government capital, economies of scale, growing specialisation, and shifts in the structure of production.

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[1] Edward F. Denison, *The Sources of Economic Growth in the United States and the Alternatives Before Us* (A Supplementary Paper of the Committee for Economic Development), New York, 1962, No. 13.

[2] He said that his concept of productivity was much narrower than that usually utilised (Ibid., p. 230).

He makes a highly arbitrary evaluation of all these factors, and I feel that these cannot be either accepted or contested with any degree of substantiation. All these factors, taken together, according to the author, account for 12 per cent of the overall increase in the national product, the rest resulting from productivity growth (roughly 20 per cent), coming from *advance of knowledge.* His qualitative interpretation of this concept is interesting: he includes in it technological knowledge and managerial knowledge. He stresses, and quite rightly, the importance of the latter. He writes: "The advance of productivity is sometimes discussed as if it were very largely the result of new technological knowledge. But surely this is wrong. Dramatic advances in management and organisational techniques and in architectural layout are visible to the naked eye. It would be difficult to find technological innovations with an impact on production exceeding that of the introduction of interchangeable parts, or of the assembly line, or of time and motion study and all that has flowed from it. Managerial and organisational advances have recently slashed the requirement for holding inventories. The design of factory buildings has been radically changed to permit the easy flow of materials, and that of office buildings to provide more usable space. Improvements in work scheduling, in personnel management and labour relations, and in methods of appraising and reaching potential markets are in this category, as are the whole fields of business organisation and the management structure of business enterprises and other producing organisations."[1]

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[1] Ibid., p. 160.

As for "technological knowledge" which increases the productivity of social production, only a part of this, according to Denison, originates in the United States itself, the rest being imported in the form of patents and licences from other countries. He attaches much importance to this source of increased knowledge not only in the past, but also in the future, when projecting national income growth.

As a result, the author reaches the conclusion that in the period under consideration, 68 per cent of national income growth was due to growing labour inputs (with an account of its higher quality) and capital inputs, and 32 per cent, to growing efficiency of social production, or technical progress. Of all the economic growth factors considered, five were especially important in the influence they exerted on national income growth: growth of employment (34 per cent), advance of education (23 per cent), advance of knowledge (20 per cent), growth of capital inputs (15 per cent) and economies of scale connected with the growth of the national market (9 per cent).

Denison's computations provide a basis for extensive information. Economic writers, for instance, frequently cite his indicator characterising the role of education in national income growth.

His computations evoked an active response among economists not only in the United States, but also in Europe.[2] Despite the serious nature of some critical remarks, most economists emphasised the novel character of Denison's work, which gives an approach to the analysis of new economic problems. The well-known French economist, Professor Edmond Malinvaud, said the following : "We should thank Denison for having had the courage to put forward his figures, without fearing the sarcasm of all the sceptics and word-spinners of our profession. Undoubtedly his conclusions are questionable, and include some quite unproven assumptions, which we can hardly accept as they stand. But is this not quite natural, at the present stage, considering it is only a first attempt? All of us here can remember the first estimates of national accounting and how very unsatisfactory they sometimes proved. Nevertheless, crude though they were, they made it possible for a working instrument to be set up which we cannot dispense with today."[1]

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[1] Ibid., p. 232.

[2] See, for instance, Moses Abramovitz, "Economic Growth in the United States. A Review Article", *The American Economic Review*, Vol. LII, No. 4, September 1962; Edmond Malinvaud, "Comments on Mr. Edward F. Denison's Paper", *The Residual Factor and Economic Growth.*

However, we should not forget that this information is of a highly tentative character. It is based on a number of assumptions which should always be borne in mind (because a change in the assumptions tends to change the results as well). The main flaw in Denison's computations springs from the fact that the influence of each factor on output growth is evaluated depending on its share in the national income. Above I said how unrealistic the premises of such an assumption were. His computations of the growing quality of labour are also based on a number of arbitrary assumptions.

The most essential and practically important result of all this research was the reassessment of the role of capital accumulation in the process of economic growth. There was growing conviction that the main strategic growth factor was not investment but factors, now and again quantitatively elusive, which promoted the returns, above all on inputs into science and human capital.

However, the conclusions that a sizable part of national income growth in the developed countries resulted from technical progress unconnected with larger capital inputs were soon questioned. The fact is that Denison's computations, like all the others given above, are based on a complete separation of the effect of quantitative change and the effect of qualitative change. This approach deals with disembodied technical progress, from it logically follows that national income growth may be ensured even without any growth of material inputs—labour and capital—

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[1] Edmond Malinvaud, Op. cit., p. 57.

and that is an assumption which beyond a certain point becomes quite meaningless. Many economists began to point out that there was an underestimation of the role of capital accumulation in the process of economic growth. Over the short term, the growth of productivity and thrift can, of course, be brought about without new investment, thanks to more rational management and organisation of production, various improvements, and so on. However, all major technological changes are inevitably connected with new investment, which is the material vehicle of technical progress. R. Solow, whose first computations were made on the assumption of disembodied technical progress, remarked at the time: "Of course this is not meant to suggest that the observed rate of technical progress would have persisted even if the rate of investment had been much smaller or had fallen to zero. Obviously much, perhaps nearly all, innovation must be embodied in new plant and equipment to be realised at all."[1]

There is good reason, therefore, why the new quest was directed towards analysis and formulation of methods for computing embodied technical progress. Various attempts were made to bring out the part which is determined by the growth of capital inputs and which, in consequence, constitutes embodied technical progress. Much was done methodically towards this end by Solow's new work which was published in 1962. In it, he said: "I assume that new technology can be introduced into the production process *only* through gross investment in new plant and equipment."[2] Of course, he says, no one can assert precisely to what extent this assumption is more justified than the very opposite one. However, in his opinion, the facts are more in favour of the former than of the latter. On the strength of this, Solow built up his production function, whose main specific feature is a special method of computing the value of capital stock: the latter is corrected for the rising productivity on the assumption that investment of every new vintage is more productive than the preceding one. This yields a value of capital stock with an account of its quality (similar to Denison's computation of labour inputs with an account of the rising quality of labour, i.e., the growth of education and labour skills).

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[1] Robert M. Solow, "Technical Change and the Aggregate Production Function", *The Review of Economics and Statistics*, Vol. XXXIX, No. 3, August 1957, p. 316.

[2] Robert M. Solow, "Technical Progress, Capital Formation, and Economic Growth", *The American Economic Review*, Vol. LII, No. 2, May 1962, p. 76.

The calculation is given for three alternatives of capital-stock growth corrected for the productivity growth rate of its component elements: premises and plant. For the first (J_3) the productivity growth rate of premises and plant constitutes, respectively, 2 per cent and 4 per cent, for the second (J_4), respectively, 3 per cent and 3 per cent, and for the third (J_5), 3 per cent and 4 per cent. In addition, account is taken of the different growth rates for labour inputs in man-hours: fast growth—1 per cent, and slow growth—0.65 per cent.

On this basis, the following investment-quota alternatives required to ensure a growth of 3 per cent, 3.5 per cent, 4 per cent, 4.5 per cent, and 5 per cent have been obtained (Table 4).

This suggests the conclusion that in order to increase growth rate from one percentage point from 3.5 per cent to 4.5 per cent, the investment quota must be increased by roughly 20-25 per cent, from 10-11 per cent to 12-14

Table 4

Investment Quotas for Alternative Growth Rates
(per cent)

Growth Rate		3%	3.5%	4%	4.5%	5%
J_3	Slow growth in man-hours	9.9	11.2	12.4	13.8	15.0
	Fast growth in man-hours	9.2	10.4	11.7	13.1	14.3
J_4	Slow growth in man-hours	9.0	10.2	11.4	12.5	13.7
	Fast growth in man-hours	8.5	9.8	10.9	12.0	13.2
J_5	Slow growth in man-hours	10.1	11.3	12.6	13.9	15.3
	Fast growth in man-hours	9.4	10.8	12.0	13.3	14.7

Source: Robert M. Solow, "Technical Progress, Capital Formation and Economic Growth", *The American Economic Review*, No. 2, May 1962, p. 85.

per cent, a much more moderate conclusion than the one suggested by computations on the basis of the production function with disembodied technical progress. In order to increase the growth rate from 3 per cent to 4 per cent, all other conditions being equal, it implies an increase of the investment quota by roughly 40 per cent.

Here are some examples of disaggregation of the technical progress indicator.

Following Solow's method, the US economist Michael D. Intriligator reached the conclusion, on the strength of a series of empirical computations, that in the 1929-1958 period, the growth rate for embodied technical progress in the United States came to 4 per cent, and for disembodied technical progress to 1.67 per cent. In the overall GNP growth rate, the former accounted for 17 per cent and the latter for 50 per cent.[1]

A similar study was carried out by the US economist Zvi Griliches on the basis of data for US manufacturing during 1947-1960. The usual approach to the assessment of technical progress showed that over 60 per cent of output growth in the period could be ascribed, he says, to the unexplained category of technical change.

He then goes on to make the relevant corrections for the improvement of labour quality due to more years of education and also the relevant corrections designed to take fuller account of so-called capital services (instead of net stock, the author believes it to be necessary to use the growth rate for gross stock, to take account of the higher quality of equipment, some discrepancy in prices, etc.) and reaches the following conclusions: of these 60 per cent, he attributes 11 per cent to a fuller account of the role of capital; 22 per cent to the higher quality of labour, and 2 per cent to economies of scale. This reduces the "unexplained" part of technical progress to 18 per cent.[2]

The attempts to bring out the embodied part of technical progress from its general indicator are, I believe, a peculiar effort to overcome the limitations of the Cobb-

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[1] Michael D. Intriligator, "Embodied Technical Change and Productivity in the U.S. 1929-1958", *The Review of Economics and Statistics*, Vol. XLVII, No. 1, February 1965.

[2] *The Theory and Empirical Analysis of Production*, New York-London, 1967, p. 317.

Douglas production function, which are determined by the static nature of its parameters. As I said above, the use of function parameters as indicators of national-income distribution is based on extremely unrealistic assumptions, notably, the assumption of perfect competition and the establishment of prices for production factors in accordance with their marginal products.

Besides, the use of national income distribution is based on extremely unrealistic assumptions, notably, the assumption to play a less important role than the growth of employment. If the shares of labour and capital in the national income equals 0.75 and 0.25, respectively, this means that a 1 per cent increase in employment will increase the national income by 0.75, and a 1 per cent growth of capital stock will increase the national income by only 0.25 per cent. What is more, because the rapidly growing factor (capital) is given a much smaller share than the slowly growing factor (labour), the residual itself—"technical progress"—turns out to be overstated. (If, for instance, national income growth rate equals 3.87 per cent, capital growth rate—3 per cent, and employment growth rate—1.5 per cent, the rate of "technical progress" will be $r = 3.87-(0.25 \times 3 + 0.75 \times 1.5)$; $r = 2$ per cent. Accordingly, the share of capital in the growth rate will be equal to 19 per cent, that of labour—31 per cent, and of technical progress—50 per cent.)

When bourgeois economists bring out embodied technical progress, they are in a position to attribute greater importance to capital accumulation, without making any change in the function parameters.

The computations of embodied technical progress to some extent "rehabilitated" the importance of investment in fixed capital, without which not only economic growth but technical progress itself is impossible. They helped to work out more balanced notions about the role of production and non-production accumulation in the process of economic growth.

* * *

While the statistico-economic analysis of growth factors on the basis of production functions has been far advanced, as compared with the 1950s, many doubts are now being expressed concerning the accuracy of the conclusions based on this analysis. Richard R. Nelson writes: "However, our knowledge still would appear to be quite weak with respect to the functional form of the relationships, and very weak with respect to the size of certain key parameters."[1]

Two lines can be brought out in the criticism now being directed at various aspects of the functional analysis of economic growth factors. One of these reflects the dissatisfaction over what has been achieved and the search for more precise evaluations of parameters and more adequate forms of production function. Let us note, in particular, that this criticism frequently bears on the basic postulates of the marginal productivity theory, the basis on which the function parameters are usually determined.[2] The second line of criticism is that an effort is being made to obtain information from production functions which they are not designed to yield. It should be borne in mind that macroeconomic production functions, like any other instrument of macroeconomic analysis, do yield and can yield only the most general notions of national economic interconnections and of the role of aggregated economic growth factors. They cannot reflect the qualitative changes in the economy which defy quantification. Where such quantitative evaluations are made, they inevitably contain elements of arbitrary assumption and subjectivism. That is why analysis based on production functions must be supplemented with other methods of analysis which, however, can hardly be its substitutes.

The various methods I have considered above for assessing the efficiency of social production through an evaluation of technical progress may—provided a critical view is taken of their underlying theory—be a useful instrument for solving the problem of measuring the social productivity of labour, or the efficiency of social production as a whole. What is important for the society, as for the individual enterprise, is not only the input of living labour, but also the input of embodied (past) labour. That is why the dynamics of social labour productivity should be expressed by an indicator characterising output per unit of all inputs of labour, both of living and embodied. In other words, it should express the economies in all these inputs which may be achieved in three ways: through economies of living labour; through economies of past labour embodied in the objects of labour; and through economies of past labour embodied in the instruments of labour, or through a combination of the three.

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[1] Richard R. Nelson, "Aggregative Production Functions and Economic Growth Policy", *The Theory and Empirical Analysis of Production*, p. 481.

[2] See, in particular, *The Residual Factor and Economic Growth.*

Each of these indicators will not in itself yield any evaluation of full efficiency of production, because each is one-sided. The ideal case is, of course, the one where output growth goes hand in hand with economies both in living and in past labour, both in labour-power and in fixed assets. Consequently, there arises the problem of how we are, after all, to evaluate the overall comprehensive efficiency of social production, especially where the partial, one-sided efficiency indicators, such as labour productivity and capital productivity, indicate opposite results.

While recognising the need to compare output growth not only with the input of living labour, but also with the input of past labour, and to analyse the influence of these inputs separately and jointly on output growth, we are in no sense inclined to underestimate the importance of living labour as the active factor in the production process. What has been said should not be taken to mean that in the process of production, living labour and the labour embodied in the objects and instruments of labour are equivalent or equal. Man and living labour has the decisive role to play in the process of production. Here, the analysis of quantitative relations has an independent limited role and lays no claim to being a substitute for the deep-seated causal relations underlying the creation of value.

3. Elaboration of the Neoclassical Theory of Technical Progress

As it was shown in the preceding section, the neoclassical theory takes a broad view of scientific and technical progress: it is qualitative change in the economy resulting from technological and organisational improvements in production and a rising level of training and education for labour. It was initially introduced into the Cobb-Douglas production function as the time-factor in order to explain that part of output increment which cannot be determined only from a growth of material inputs of labour and capital.

Subsequent analysis of the impact of scientific and technical progress on economic growth involved the elaboration of a more differentiated system of quantitative characteristics of technical progress reflecting not only the overall influence of scientific and technical progress on economic growth, but also the differences in its influence on the efficiency of individual growth factors and also its influence on the extent of economic resources substitution. These characteristics provided the basis for the development of a general theory of technical progress and transition to more complicated types of production functions.

Let us briefly consider the system of these characteristics, taking for our starting point the above Cobb-Douglas function with neutral disembodied technical progress:

$$Y = AK^{\alpha}L^{\beta}e^{rt}.$$

Neoclassical theory has the following categories among the characteristics of technical progress:

1. Efficiency of technical progress;
2. Economies of scale;
3. Labour- or capital-intensiveness of technology; and
4. Elasticity of labour and capital substitution.

The first two characteristics of technical progress determine the relations between input and output. The efficiency of technical progress shows the overall contribution made to economic growth by rising efficiency of production factors in connection with the advance of science and education, improvement in production engineering, etc., i.e., the connection with the overall broadly-viewed process of scientific and technical progress. It is measured by the indicator r—the rate of technical progress and its share in the rate of output growth. Economies of scale are a specific characteristic of technical progress and are connected with the growing scale of production, the development of markets, the deepening of specialisation, and so on. It is characterised by the extent to which the sum total of elasticity coefficients $\alpha + \beta$ differs from unity.

The two other characteristics bear on the correlation of production factors and their marginal products, and are the basis for bringing out two types of technical progress: neutral and non-neutral. Capital- or labour-intensive technical progress characterises the influence of technical progress on the marginal products (or efficiency) of the individual production factors. This influence can be the same, and then it is neutral. In that case, the relation between the factors and their marginal products, the marginal substitution quota and the share of the factors in output do not change. This means that the correlation of the elasticity coefficients for labour and capital $\frac{\alpha}{\beta}$ remains unchanged.

But this influence can also be different. If the marginal product of one of the factors tends to grow faster than that of the other (with the correlation between the production factors or the relation of the given factor to output remaining constant)[1], the result will be either capital-intensive or labour-intensive technical progress, i.e., non-neutral technical progress. In that case, the relations between the factors and their marginal products will change, as will also the marginal substitution quota and the factor share in output. The $\frac{\alpha}{\beta}$ ratio is not constant.

Finally, the elasticity of substitution, or the ease with which capital is substituted for labour, shows how the relation between the production factors changes depending on the changes in the correlation of their prices, which, it is assumed, reflect changes in their marginal products.

$$\delta = E\left(\frac{K}{L}\right) / E\left(\frac{W}{P}\right).$$

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[1] Depending on the correlation adopted as given, neoclassical theory draws a distinction between three definitions of non-neutral technical progress. There is the definition by Hicks, when the ratio of the production factors $\frac{K}{L}$ is taken as the constant; by Harrod, when the capital-product $\frac{K}{Y}$ ratio is taken as the constant; and that by Solow, who takes labour productivity $\frac{Y}{L}$ for his constant.

If the elasticity of substitution is equal to unity, the change in the price ratio (profit and wages) will cause an exactly the same change in the capital-labour ratio. If it is greater than unity, the change in the profit-wages ratio will cause much greater changes in the capital-labour ratio, and vice versa.

In accordance with the adopted classification, the elasticity of substitution equal to unity is the sign of neutral technical progress. If it is not equal to unity, technical progress is non-neutral, since it is assumed that the difficulties of substituting capital for labour are due only to technical causes.

This classification of the marks of technical progress (abstract technology) is a useful instrument for *empirical* analysis of the influence of technical progress on economic growth with the aid of the production functions.

But their interpretation calls for some additional explanations.

There is no special difficulty in understanding the characteristics of neutral technical progress. With definite assumptions, they can be recognised as tentative gauges of the contribution made by technical progress to economic growth. They can also serve as indicators of aggregate production factor efficiency. These characteristics can be obtained through various modes of verification of the Cobb-Douglas function.

The characteristics of non-neutral technical progress are a more complicated matter. I showed above that the most important role in determining non-neutral technical progress is assigned to two indicators: the elasticity of substitution indicator δ and the capital-intensiveness indicator measured as the ratio of the production factor shares in output $\frac{\alpha}{\beta}$.

Let us consider more closely how the concept of the elasticity of substitution is interpreted in neoclassical theory. In concrete computation, δ is measured as the coefficient which characterises the change in the capital-labour ratio $\frac{K}{L}$, depending on the change in the price ratio $\frac{W}{P}$. Thus, for instance, the higher the price of labour, i.e., the higher the wage level, the greater the incentive to substitute capital for labour, and the higher is $\frac{K}{L}$. If there are no technical or socio-economic obstacles to such substitution, and if the efficiency of the production factors changes similarly, then $\delta = 1$. If anything prevents such substitution, or if, for technical reasons, a unit of one and the same factor requires considerably more or less recruitment of the other resources, then δ is greater or lesser than $1 (\delta \gtrless 1)$.

Consequently, measurements of the magnitude of the elasticity of substitution are of definite practical interest. But having obtained this magnitude, we can still say nothing about which factors have ensured this level of it.

The point is that the specific technological aspects of production are *one* of the elements determining the proportions in factor substitution under the impact of changes in their prices or producing obstacles to such substitution.

However, the magnitude of this relation is influenced above all by socio-economic and political factors, among them trade-union policies, government intervention, traditions, obstacles to labour migration, inflexibility of price-formation, monopoly policies, and so on. These factors must also be reckoned with in the analysis. Consequently, the characteristics of technical progress itself are distorted if all these causes are reduced to the specifics of technical progress.

If the magnitude δ is to be an indicator only of the specifics of technical progress, there is a need to apply the basic theoretical premises of neoclassical theory; first, there is a need to postulate free competition and the absence of socio-political factors generating diverse inflexibilities in the economic system; second, there is a need to accept the equality of profit and wages to the marginal products of the corresponding production factors; and third, there is a need to recognise the homogeneity of capital. In that case, δ will testify to the nature of the correlation of L, K and their marginal products. If, for instance, the marginal product of labour grows faster than the marginal product of capital (in consequence of the accumulation of production experience), it will take several units of capital to substitute for a unit of labour, and $\delta > 1$. Only with these premises can the elasticity of substitution reflect the specifics of technical progress, consisting in the fact that the efficiency of production factors tends to rise unevenly: the efficiency of one of them grows faster, and its contribution to economic growth becomes more weighty (the production process becomes more labour-intensive or more capital-intensive). Such an interpretation is a logical one within the framework of the adopted assumption. But these assumptions themselves, as I have said, do not accord with the reality. That is why the elasticity of substitution, empirically measured as a relation between the rate of change of the capital-labour ratio and the rate of change of the wages-profit ratio cannot serve as a sufficiently reliable indicator of the type of technical progress.

One can, apparently, judge more reliably about the type of technical progress on the basis of purely empirical computations of the $\frac{\alpha}{\beta}$ ratio over protracted periods of time.

Neoclassical economists identify these coefficients with national income distribution among the main classes in the society, assuming that a dynamic of the distribution indicators can signal this or that type of technical progress, so that a growth in the share of wages would point to a labour-intensive type of technical progress, and vice versa. However, if the neoclassical premise concerning the equality of the marginal products and the production factor prices is discarded, and the change in $\frac{\alpha}{\beta}$ determined through purely empirical analysis, the data so obtained will apparently be a reflection of the influence of the type of technical progress.

An increase in one of the coefficients as compared with the other would indicate a rise in its efficiency and its greater influence on economic growth. Conversely, a reduction in the other would testify to a decline in the strength of its influence on economic growth.

Consequently, while recognising the utility of the mechanism for analysing technical progress, I think it is necessary to emphasise that it can be applied only within the framework of a purely *empirical* approach. There is good reason why the extended potentialities for modelling technical progress, elaborating the mathematical formalism for its analysis and creating a system of quantitative characteristics of technical progress all went to provide an impetus to the development of empirical studies in this field, which is of unquestionable practical interest. These studies involved the elaboration of a conception of endogenous technical progress whose rate and level are determined by factors within the economic system. Hence the problem of concretising these factors and working out methods for their quantitative analysis. The cost of research and development, education, and the advance of knowledge—all these are elements of input which were analysed as factors determining technical progress.

In close connection with the solution of this problem was also another branch of this analysis, the problem of embodiment of technical progress, because it is quite obvious that most qualitative changes in the economy are embodied in more skilled and experienced labour power, in more perfect equipment, etc. The author of a survey of economic growth theory is quite right in saying that, "In principle, if all the inputs are properly measured and the function governing their interaction is precisely specified, then the residual $a A/A$ should be zero or nearly so."[1] This line of analysis has produced some new statistical methods in evaluating and accounting qualitative changes in inputs, which have produced some interesting results. It has stimulated the elaboration of models of embodied technical progress.

Numerous studies have also been made in the more precise evaluation of inputs, especially of capital, the statistical methods for whose computation are still extremely imperfect. It is held that many shortcomings in evaluating the magnitude of capital are the reason for which the "contribution" by capital to economic growth is understated. One interesting approach to the evaluation of capital was connected with the premise that every new vintage of capital had a higher productivity. Thus, in computing the total magnitude of capital, each successive vintage must be given a greater weight. The result of such computations is also a considerably higher "contribution" by capital to economic growth. Meanwhile, the total "contribution" of technical progress is divided into that which is disembodied and that which is embodied in investment. Consequently, one could say that there has been some advance in the *quantitative* methods of analysing technical progress, but this does not apply either to the theoretical interpretation of technical progress itself based on the general premises of neoclassical theory, or to the theoretical interpretation of models with the inclusion of various types of technical progress. This applies especially to the neoclassicists' use of conceptions concerning the types of technical progress for "modernising" the neoclassical theory of distribution.

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[1] M. Ishaq Nadiri, "Some Approaches to the Theory and Measurement of Total Factor: A Survey", *The Journal of Economic Literature*, Vol. VIII, No.4, December 1970, p. 1150.

PART THREE

POST-KEYNESIANISM

CHAPTER SEVEN

THE SHAPING OF THE POST-KEYNESIAN SYSTEM: HISTORICAL CONTEXT

1. The Crisis of Bourgeois Economics in the 1970s and the Critique of Keynesian Orthodoxy

The 1970s, which were marked by a sharp aggravation of the contradictions in the socio-economic development of capitalism, brought about substantial shifts in bourgeois economic thought. The old dogmas went bankrupt. Meanwhile, there was also a search for ways to modernise the old theories and an active quest for new conceptions for the functioning, reform and government regulation of the capitalist economy.

The state of bourgeois economics in 1970s was largely reminiscent of that which it had gone through in the 1930s. At that time, as I showed in Chapter I, there was glaring evidence of the incompetence of the predominant neoclassical school with its apologia of laissez-faire capitalism and its ideology of government non-intervention in economic affairs. That is when Keynes came forward with his macro-economic theory, which laid the foundations for a new economic theory system conforming to the formation of state-monopoly capitalism.

The 1950s and 1960s were a period of Keynesianism's "triumphal advance" and the shaping of its orthodox version, which was to become the dominant trend in bourgeois economic thought.

When considering Keynes's theory and the further development of Keynesianism, I stressed the peculiarities of that development. It was based on an interpretation of Keynes's theory for determining national income level which subsequently came to be known as the "standard income-expenditure model", as "orthodox", "text-book"

Keynesianism. Some lines of Keynes's analysis turned out to be worked out in sufficient detail. This applies to the dynamic of effective demand, the function of consumption and investment, the multiplier concept, that is, everything that belongs to the sphere of so-called "real", i.e., reproduction factors. But other lines of analysis relating to the monetary sphere (the dynamic of the money mass, the rate of interest, prices) were designated as inessential and had virtually no role to play in the corresponding theoretical constructs (models of growth and economic cycles). The result was a moneyless version of Keynesian theory.

In consequence of this peculiar development, a theory which recognised the importance of money and its specific ways of influence on economic processes became a theory which left money outside the framework of its theoretical analysis.[1] The second essential feature of orthodox Keynesianism was its interpretation of the theory for determining national income level as a theory of equilibrium with underemployment. This meant that the theory described and explained only a particular case of general equilibrium whose existence the neoclassical school tried to substantiate.

On the whole, there was nothing unexpected about this interpretation of Keynes's theory because his writings contain statements to the effect that, with the full employment of resources, the laws of general equilibrium are set in motion and the economy functions in accordance with the scheme outlined by neoclassical theory. What is more, they suggested that this general equilibrium could be re-established by means of fiscal and monetary policies for regulating aggregate demand. It was this interpretation of Keynesianism that provided the starting point for "neoclassical synthesis", i.e., for the formalistic marriage of Keynesianism and neoclassical theory for the theoretical substantiation of a mixed economy, in general, and of government economic control, in particular.

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[1] Foreign economists now note this peculiarity in the development of Keynesianism. Thus, a text-book of political economy written by the Italian Marxist Antonio Pesenti says: "Assuming that one of Keynes's fundamental contributions to the theory of the Cambridge School's economists is said to be the overcoming of the classical dichotomy between the monetary and the real sectors and the inclusion of money into the stochastic fabric of the process of establishing the level of income and employment, one could find it strange that this model has enjoyed and continues to enjoy such great popularity today. But the explanation of this phenomenon is fairly simple: Keynes's simplified model does abstract from a series of phenomena, notably, the importance of money, but then it has the advantage of bringing out the relation between global demand and income, and includes the function of consumption and the multiplier principle, i.e., the latest aspects of Keynesian theory" (Antonio Pesenti, *Manuale di economia politika*, Volume secondo, Roma, 1972, p. 407).

The orthodox Keynesian theory for determining national income level (like the theory of the cycle and economic growth based on it) proved to be fraught with serious theoretical and practical flaws in political recommendations.

Despite the fact that the formation of effective demand was central to all the Keynesian models, the explanation of its individual components turned out to be oversimplified and inadequate. While tying in a change in investment—in accordance with the accelerator principle—with change in national income, the Keynesians gave too little attention to autonomous investment unconnected with the national income dynamic. Within the framework of the simplified model, even the fluctuations of the "marginal efficiency of capital", by means of which Keynes himself explained the changes in the nature of investment and cyclical character of capitalist production as a whole, were not adequately developed. As for the dynamic of consumption, its form (lag of consumption increase behind income increase) was determined by Keynes's "fundamental psychological law", which ignored the class character of consumption and its dependence on income distribution and other economic and non-economic factors. In most Keynesian models, the rise in consumption was determined only by the rise in current income.

A number of other defects in orthodox Keynesian theory was also connected with its assumption of price stability, including the inflexibility of wages. It was assumed that all economic adjustments in this model were effected through quantitative changes, i.e., through changes in national income volume, and not through changes in relative prices.

There was also the assumption that the money factor was of secondary importance. The advocates of the simplified model started from the assumption that, in the presence of idle productive capacity and underemployment, an increase in money supply would not have an effect on prices. They held that "true inflation" could arrive only under full employment and full loading of productive capacity, and this led to some ignoring of inflation and its negative effects.

This Keynesian orthodoxy became the basis for elaboration of business cycle policy. Fiscal policy, providing for an increase or reduction in government budgetary expenditures and also changes in taxation, depending on the phase of the cycle or economic growth rate, were recognised as the basic instrument of regulation. In practice, this developed into a justification of steadily growing budget deficits. Monetary policy was also to "work" in the same direction, easing the terms of crediting in periods of recession and crisis and tightening them up in the event of excessive growth.

But since this policy fails to do away with the causes behind the cyclical development of the capitalist economy, it merely helps to ease the crisis decline in production, while being fraught with grave inflationary consequences. It made a contribution to the development of inflationary processes by inducing excessive growth of money supply. Ultimately, it proved to be totally powerless in the atmosphere of steadily mounting inflation, which in the 1970s was intensified in all capitalist countries.

The positions of Keynesianism were fortified by the fact that from the latter half of the 1940s to the mid-1960s, there had been no deep economic crises in the countries of Western Europe practising government regulation. The unusually long postwar upswing in the United States in the 1960s, which lasted for nearly eight years, was proclaimed by the advocates of Keynesianism to be a triumph of the "new" Keynesian economic policy.

All of this led to the spread of confidence that the mechanism of government regulation had been more or less adjusted, and that the theory behind it was true and scientifically valid. But these delusions were soon exploded by the reality. The structural and cyclical crises of the

1970s, especially the 1974-1975 crisis, and the inflation, which became chronic and irreversible, all of this, taken together, disrupted the economic policy and led to obvious confusion as to how the economic difficulties were to be tackled. There was a collapse of the standard Keynesian schemes of business cycle policy, according to which efforts were made to contain inflation, which usually coincided with the upward phase, by limiting demand, and to overcome the crisis by expanding it. The mounting inflation tends to complicate the government's policy in the upward phase as well; the attempts to stimulate upswing with the use of traditional methods now always tend to sharpen the inflationary processes, and this calls for extremely cautious use of the old stimulants.

The orthodox Keynesian doctrine of government economic regulation found itself compromised.

The crisis of orthodox Keynesianism, as the official doctrine of government regulation, was marked by a sharp growth of its criticism not only from its traditional adversaries, the neoclassicists, who campaigned under the banner of a "neoclassical revival".

In the mid-1960s, a new strand appeared and began to grow in the criticism of Keynesianism, as the advocates and proponents of Keynes's theory themselves began to urge a review of the orthodox version of Keynesian economic theory.

This review began on the initiative of some members of the new generation of Keynesians, among them Robert W. Clower, Axel Leijonhufvud, Paul Davidson, Sidney Weintraub and Hyman Minsky. This group of Keynesians fiercely attacked the orthodox theory and asserted that the version of Keynesianism elaborated by the older generation—above all by Hansen, Samuelson and Hicks—had in fact distorted the true meaning of Keynes's theory and had little in common with what he had actually thought and written. Paul Davidson, for instance, said: "The orthodox establishment economists think they're Keynesians, but they're bastard Keynesians, and they are leading the economy down the garden path."[1] Minsky says that the "revolution" started by Keynes was thrown overboard because his theory was reduced to an analysis of static equilibrium and then assimilated by neoclassical doctrine. "The standard interpretation makes Keynes the apostle of a new conservatism that promotes investment at the expense of private and public consumption and income inequality at the expense of social justice."[1] Weintraub, emphasising Hick's special role in the elaboration of orthodox Keynesian theory (Hick's interpretation had helped to bring about the neoclassical synthesis of Keynesian and neoclassical theory), called it "Hicksian Keynesianism" and asserted that it would not be incorrect to use this term to designate the sum of ideas which dominated the textbooks and economic journals and which permeated the mentality of self-made Keynesianism as Hicksian Keynesianism, for many of these ideas had only a tenuous connection with Keynes's *General Theory.*[2]

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[1] Paul Davidson, *Business Week*, May 12, 1975, p. 42.

There is much in the approach of the "new" Keynesians that is consonant with monetarism, to the extent that they emphasised the role and importance of money factors which, they believe, produce economic instability. At the same time, there are essential differences between them and the monetarists. Like the orthodox, they swear by the same bible—*The General Theory of Employment, Interest and Money.* Besides, in contrast to the monetarists, they are extremely opposed to the idea of the internal stability of the capitalist economy, believing that the idea of its internal instability was central to Keynes's theory.

An article by Robert W. Clower containing a fundamentally new interpretation of Keynes's theory was something of a milestone in the development of this new approach.[3] In contrast to orthodox Keynesianism, which saw it as a theory of "unemployment equilibrium", and neoclassical synthesis, which saw it only as an individual case of the neoclassical theory of general equilibrium, Clower argued that Keynes's theory was above all a theory of disequilibrium. It was a theory which described an economy that did not seek to re-establish equilibrium (even with "unemployment") but constantly to upset it. He deduced this property of the economic system from the imperfect information, from the differences in the expected and actual magnitudes capable of causing chain reactions in the economy and ceaselessly undermining its steady state.

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[1] Hyman P. Minsky, "John Maynard Keynes". Quoted in: *The Journal of Economic Literature*, No. 2, June 1976, p. 538.

[2] See: *Modern Economic Thought*, Ed. by S. Weintraub, Oxford, 1977, p. 41.

[3] Robert W. Clower, "The Keynesian Counterrevolution: A Theoretical Appraisal", *The Theory of Interest Rates*, Macmillan and Co. Ltd., London, 1965.

Clower was one of the first to suggest that the break between Keynes and the neoclassicists was deeper and more fundamental than the latter's followers had subsequently claimed. It was this idea of Clower's based on the importance which Keynes attached to the role of uncertainty in economic processes that his associates took up.

An important step in the development of the new interpretation of Keynesianism was made by Axel Leijonhufvud in 1968, when he subjected the orthodox version of Keynesian theory to especially sharp and full-scale criticism. Like Clower, Leijonhufvud held that Keynes's theory could not be reduced to a particular case of equilibrium, to "unemployment equilibrium", for there was, in fact, no equilibrium. Its disturbances are not accidental, but are organic to the economy and are a result of the uncertainty, the imperfection of economic information, and the delayed and inelastic economic responses to various changes.

Any disturbance on the market caused by imperfect information tends to become a cumulative process limiting income growth. Leijonhufvud says that Keynes's theory is not a static theory of "unemployment equilibrium", but an essentially dynamic theory of the "macroeconomic process of *adjustment* to a disequilibrating disturbance".[1]

Let us emphasise that the idea of imperfect information and uncertainty is an important one among the methodological principles by which the advocates of restructuring Keynesianism are guided. That was also the idea behind the critique of the perfect competition model, the basic assumption of neoclassical theory. That is the context in which there are now very frequent references not only to Keynes's work, in which the principle of uncertainty and imperfect information was highly important in the general theory and especially in the theory of accumulation; in connection with the uncertainty principle references are made to the 1930s works of Knut Wicksell, Dennis Robertson and especially Gunnar Murdahl, who first introduced the now widely accepted method of analysis on the basis of a distinction between *ex ante* and *ex post* magnitudes. Some economists believe that the introduction of the uncertainty principle shook the foundations of the neoclassical system, namely, the idea of the existence of a rational well-informed subject for whom the future was just as certain as the present.

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[1] Axel Leijonhufvud, *On Keynesian Economics and the Economics of Keynes's*, New York, 1968, p. 50. See also R. Barro and Herschel I. Grossman, "A General Disequilibrium Model of Income and Employment", *The American Economic Review*, March 1971, pp. 82-93.

The British economist G.L.S. Shackle had good reason to say that in its subsequent development orthodox Keynesianism tried to avoid the time bomb laid under the traditional methodology. He said: "In the latter 1920s and the 1930s, a great spasm of creative effort in economic theory responded to the visible dissolution of the comparatively orderly Victorian world in which Marshall had been able to discern the gradual perfectibility of industrial and social organisation hinting at the perfectibility of human nature itself. The tranquillity had been shattered, and the theory of economic life which reflected it needed to be transcended and even wholly subverted. Not merely the detailed design of the economist's account of things needed to be changed, but its fundamental assumptions, its purposes and ambitions, what it claimed to do had to be essentially reconsidered. Such a reorientation was hard to accept and is still mainly unaccepted."[1]

Critics of orthodox Keynesianism connect economic instability and the cyclical nature of economic growth with the financial instability of the capitalist economy. They believe that the uncertainty and the imperfect information tend to produce fluctuations in the economic situation precisely because the capitalist economy has an elaborate system of monetary and financial institutions which are especially perceptible to change under the impact of optimistic or pessimistic expectations. It is through the "financial veil" that money exerts an influence on the economic system. So, Minsky, one of the authors of the theory of capitalism's financial instability, holds that financial crisis or the threat of financial crisis is at the bottom of the economic crisis of the capitalist system, so that the attempts to ease these crises by means of the traditional instruments of regulation may have achieved these goals but at the price of developing chronic inflation.[1]

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[1] *Modern Economic Thought*, Ed. by Sidney Weintraub, Basil Blackwell, Oxford, 1979, p. 37.

It is the idea of uncertainty, says another US economist, Wallace C. Peterson, that makes money the key parameter of *The General Theory*. In the atmosphere of uncertainty, money operates as the connecting link between the present and the future, distorting the nature of this link in the process. Peterson holds that "there is a basic dichotomy in the economic process, a split similar in its consequences to the institutionalist division of activity into pecuniary and nonpecuniary forms... Money is not neutral. Its special characteristics and unique role in lulling desquietude about the future are the key to understanding the fundamental flaw in capitalism, the inherent and inescapable tendency of the system toward instability and excessive unemployment."[2]

While having recognised that the economic instability and disequilibrium produced by uncertainty are rooted in the nature of the capitalist economy, above all in its financial instability, the critics of orthodox Keynesianism stopped short of pinpointing the basic disproportions in the development of capitalist reproduction.

But the fact is that a statement of financial instability in the development of social production by itself falls far short of an indication of the in-depth contradictions of capitalism which determine economic instability, and especially the inevitability of economic crises. Lenin emphasised that "*even* with an ideally smooth and proportional reproduction and circulation of the aggregate social capital, the contradiction between the growth of production and the narrow limits of consumption is inevitable".[1] The vague references to the "imperfection" of economic information puts one in mind of the sporadically arising and frequently casual sources of fluctuations and obscures the real source of the periodic crises, namely, the contradiction between social production and private capitalist appropriation, which is expressed, in particular, in the form of the contradiction between production and consumption, in the anarchy of the capitalist economy, and in the contradiction between the conditions in which surplus-value is produced and in which it is realised.

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[1] See: Hyman P. Minsky, "The Financial Instability Hypothesis: An Interpretation of Keynes and an Alternative to 'Standard' Theory", *Challenge*, March-April 1977, pp. 20-26.

[2] Wallace C. Peterson, "Institutionalism, Keynes, and the Real World", *Challenge*, May-June 1977, p. 32.

The full list of the points on which the neo-Keynesians criticised their orthodox fellows is given by Sidney Weintraub, a well-known US economist and an advocate of the new approach to Keynes's theory, in the above-quoted work, *Modern Economic Thought.* Among the basic flaws of "Hicksian Keynesianism", he lists, first, the simplified view of the economy, which can suffer either from unemployment or from inflation, both being allegedly under the control by diametrically opposite measures of fiscal and monetary policies. Second, the use in the models of magnitudes in real terms, i.e., abstraction from price changes even after inflation has appeared in theoretical analysis in the form of the "Phillips curve". Third, the ignoring of the "wage unit" category, by means of which Keynes proposed to measure the economic magnitudes of his theory. Fourth, the ignoring of the factors of uncertainty, risk and imperfect information as important factors determining investment in the capitalist society. Fifth, the abstraction from the monetary factor, from the problem of distribution and, in this connection, the break between macroeconomic and microeconomic theory. Sixth, the interpretation of Keynes's theory as a particular case of the general theory of equilibrium paving the way for neoclassical synthesis. Seventh, the habit of regarding Keynes's theory as a static one, whereas it is allegedly at root a dynamic theory.

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[1] V. I. Lenin, "Once More on the Theory of Realisation", *Collected Works,* Vol. 4, 1972, p. 87.

An interesting summing-up work was published in 1976 by the well-known US Keynesianist W. Fellner.[1]

He says that Keynes's division of unemployment into voluntary and involuntary does not accord with the reality, although this definition is of key importance in the formulation of the purposes of demand-management policy (the unemployment specificially). But the present conditions on the labour market, Fellner believes, make it impossible to draw a clear distinction between "voluntary" and "involuntary" unemployment.

All of this, in his view, casts doubt on Keynes's main conclusion that a moderate increase in prices which reduces real wages, that is, moderate inflation (inflationary real-wage moderation) can help to extend the scale of employment by reducing the number of so-called "involuntary" unemployed. "The Keynesian concept of involuntary unemployment or the underlying hypothesis of inflationary real-wage moderation served well as a guide to demand-management policy."[2]

A comparison of Keynes's theory with the actual state of things in the US economy over the preceding decade led Fellner to draw the conclusion that the policy of inflationary real-wage moderation did not justify itself.

Thus, Keynesian criticism of orthodox Keynesianism tended to exaggerate its shortcomings, on the one hand, while giving its idol more credit for perspicacity than he deserved, on the other, and at the same time—perhaps even because of these exaggerations—exposed a number of real flaws in Keynesian theory to which Marxist critics had already drawn attention and whose nature they had analysed more incisively. There was, above all, its neglect of the internal contradictions of the capitalist economy, which inevitably generated ever more new forms of instability, the inflationary character of Keynesian recipes for government economic regulation, and so on. The criticism of orthodox Keynesianism was a forced recognition by bourgeois economics of the fact that the traditional Keynesian doctrine of government regulation was incapable of setting up a balanced and inflation-free paradise in the capitalist economy and that it was in need of serious renovation.

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[1] William Fellner, "Lessons from the Failure of Demand-Management Policies: A Look at the Theoretical Foundations", *The Journal of Economic Literature*, Vol. XIV, No. 1, March 1976, pp. 34-61.

[2] Ibid., p. 36.

2. The Shaping of Post-Keynesianism: Epistemological and Methodological Principles

The tide of new ideas generated by the criticism of orthodox Keynesianism and the urge to restructure Keynes's theory on "its own" basis enjoyed understanding on the part of another long-established theoretical trend which had a fairly well-elaborated theoretical basis, namely, the British Cambridge School, of which Joan Robinson was the recognised leader. Many members of this school–Joan Robinson, Nicholas Kaldor and P. Sraffa, among others–had been either associates or disciples of Keynes's. But their theoretical constructs existed within Keynesianism as a kind of "heresy", as a deviation from its orthodox version.

In due course, the writings of Joan Robinson and her followers were classified by Soviet economic writers as "left-wing Keynesianism". They attracted attention because their authors started from an anti-monopoly interpretation of effective demand, connecting its expansion with a curb on the monopolies, social reforms and containment of the arms race. One cannot but note that from the outset left-wing Keynesianism was under some influence from Marxism. Joan Robinson was largely instrumental in the re-appraisal of the importance of Marxist theory, which has now taken place in the West. She wrote: "The academic economists, without paying much attention to Marx, have been forced by the experiences of modern times to question much of the orthodox apologetic, and recent developments in academic theory have led them to a position which in some respects resembles the position of Marx far more closely than the position of their own intellectual forbears."[1]

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[1] Joan Robinson, *An Essay on Marxian Economics*, Macmillan and Co. Ltd., London, 1949, p. 4.

Even then, in the late 1940s and early 1950s, Joan Robinson frequently expressed the idea—heretical for her environment (but essentially utopian)—of "combining" Marx's analysis with the instruments worked out by orthodox bourgeois economics. This idea largely determined the peculiar development of the Cambridge School as a whole and of left-wing Keynesianism, in particular. Indeed, the rise of radical attitudes and the growth of interest in Marxism since the late 1960s and especially in the 1970s made this school most popular among young economists—and for a good reason—bringing it to the forefront just when the need was felt to refurbish bourgeois economics. The blend of the two ideological streams—US non-orthodox Kenesianism and its left-wing version which had taken shape in Cambridge, England—started the formation of a new trend in bourgeois economic thought: *post-Keynesianism*. A product of the crisis of the 1970s, it has made a serious claim to a new synthesis of bourgeois economic thought, an attempt to renovate bourgeois economics in the new conditions of development of state-monopoly capitalism.

The post-Keynesians regard themselves as the true followers of Keynes and the continuators of the "revolution", which he began. They urge the final overthrow of the neoclassical system and its replacement with a new, post-Keynesian economic paradigm.

Joan Robinson was one of the first in the West to speak of the crisis of orthodox Keynesianism. She held that the crisis originated from the fact that the "Keynesian revolution" truned out to be an imaginary ("bastard") one. It merely repaired the old neoclassical conception but did not signify abandonment of its fundamental principles. "Now, it seems that the bastard Keynesian's era is coming to an end in general disillusionment; the economists have no more idea what to say than they had when the old equilibrium doctrine collapsed in the great slump. The Keynesian Revolution still remains to be made, both in teaching economic theory and in forming economic policy."[1]

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[1] Joan Robinson, "What Has Become of the Keynesian Revolution?", *Essays on John Maynard Keynes*, Ed. by Milo Keynes, Cam-

The post-Keynesians regard Keynes's theory as a source of the new system of economic views. Apart from Keynes, many of them emphasise the importance of the ideas of Michal Kalecki, the well-known Polish economist, who enunciated his macroeconomic theory, which he connected with the problems of distribution and which he put in an anti-monopoly context, back in 1930s, before the appearance of Keynes's book. He sought to bring out the fundamental macroeconomic and socio-political determinants behind the distribution of national income, and to do this in a form that lent itself to statistical verification. In his computations, much importance is attached to the organic composition of capital (ratio of material costs to wages) and the extent to which the economy is monopolised. He also held that the factor which counteracted monopolisation was the growing strength of the trade-union movement of the working class (an idea furthter elaborated by Joan Robinson).

There are many facts testifying to the popularity which Kalecki enjoys among post-Keynesian economists. Alfred S. Eichner, a leading ideologist of the school says: "It is difficult to say who, in the succeeding forty years, exerted the greater influence on the development of post-Keynesian theory, Keynes himself or Kalecki. Together, they represent the origins of the two separate trends in classical Keynesianism—one strand emerging from the monetary perspective of Keynes and the other from the real sector analysis of Kalecki. (The distribution of the national income between profit and wages—*I.O.*). The first emphasises the uncertainties surrounding investment in a monetarised economy, the second, the distributional and other effects of investment and savings, with both elements essential for a complete analysis of production over time in a money-using economic system."[1]

The post-Keynesians think high of the economists of the institutional trend, who were among the first to mount a critical offensive against the neoclassical school and who

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bridge University Press, Cambridge, London, New York, 1975, p. 131.

[1] Alfred S. Eichner, "Post-Keynesian Theory: An Introduction", *Challenge*, May-June 1978, p. 6.

proposed a new methodology for analysing economic processes with an eye to the existence and interaction of the system of socio-economic institutions.

In the theory of value, they seek to revive Ricardian traditions and make much of Piero Sraffa's *The Production of Commodities by Means of Commodities.*[1]

Some members of this school have gone even farther, towards Marx recognising the advantages of the Marxist approach to the problems of capitalist reproduction and trying to make use of some elements of its analysis.

According to Eichner, members of this group represent various trends in economic theory—those of American institutionalists, European Marxists and of Keynes's close colleagues. Their work as a whole may serve as a potential basis for elaborating a universal and logical alternative to orthodoxy prevalent in economic theory, an orthodoxy which due to its unrealistic nature is the main obstacle to a realistic economic policy.[2]

Consequently, the new "synthesis" springs from a highly eclectic mix of unorthodox trends mainly in *bourgeois economics.* This fact alone shows that one can expect no fundamental review of the substance and goals of the theoretical economic system as one serving for an apologia of capitalism and the elaboration of practical recipes for its reform and regulation.

However, post-Keynesianism also has a number of peculiarities, among them the following:

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[1] Alfred S. Eichner (USA) and J. A. Kregel (Britain) wrote back in 1975: "Keynes's is only one of the contributions upon which the new approach is based. Certainly the work of Michal Kalecki has been no less important than that of Keynes; and to the extent that the new approach rests on the theory of value which grows out of the work of John von Neumann and Piero Sraffa, those names need to be mentioned as well" (Alfred S. Eichner and J. A. Kregel, "An Essay on Post-Keynesian Theory: A New Paradigm in Economics", *The Journal of Economic Literature*, Vol. XIII, No. 4, December 1975, p. 1293). The Italian Alessandro Roncaglia, a professor of political economy at Peruggia, says: "Sraffa's 1960 book *Production of Commodities by Means of Commodities* has been cited as playing a decisive role in the development of post-Keynesian theory" ("Alessandro Roncaglia, "Sraffa and the Reconstruction of Political Economy", *Challenge*, January-February 1979, p. 48).

[2] See: Alfred S. Eichner, "Post-Keynesian Theory: An Introduction", *Challenge*, May-June, 1978, p. 5.

a) sharp criticism and rejection of the basic propositions of the "neoclassical" school, above all of the marginal productivity theory and the marginal utility theory;

b) a revival of the traditions of classical economics, mainly in the form of neo-Ricardianism and a re-evaluation on that basis of the key categories of bourgeois economics; value, capital, profit, distribution, etc.;

c) repudiation of orthodox Keynesianism and a reassessment of Keynes's theory;

d) an extension of the field of economic analysis through the introduction of socio-economic institutions characterising actual economic activity; and

e) recognition of Marx's theoretical achievements and attempts to use some of his methods to analyse the processes of capitalist reproduction.

An editorial in a US journal said: "Without claiming to have evolved a finished doctrine, economists working in this new direction regard it as a potential alternative to both neoclassical economics and the more 'traditional' varieties of Keynesianism."[1]

The post-Keynesians seek to overcome the narrowness of the traditional neoclassical analysis which was predetermined by the methodology of the neoclassical school as it abstracted itself from all the socio-economic and institutional conditions and sought to convert economic science into "pure" theory. The editorial goes on: "Ever since the marginalist revolution of the late nineteenth century, economic theory has become increasingly more elegant as a set of axiomatic statements about resource allocation under competitive market conditions. The precision with which assumptions are stated, the subtlety with which the logic is then pursued, and the rigour with which a proof is finally adduced all seem to support the claim of economics to be the Euclidian geometry, if not the physics, of social sciences. At the same time, economic theory has become less and less useful to anyone hoping to understand phenomena of the real world, such as economic growth, cyclical fluctuations, inflation, poverty, unemployment, underdevelopment—or even business success... It is this contrast between its elegance and its relevance that underlies the current crisis in economics—a crisis which threatens the discipline's reputation as a science."[1]

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[1] *Challenge*, May-June 1978, p. 2.

No wonder many economists have discarded theory and got down to empirical studies spontaneously based on premises other than those of the neoclassical system.

The post-Keynesians have been trying to formulate a new economic theory system on the basis of a number of realistic premises relating to the functioning of the present-day capitalist system.

They have been trying to produce a coherent theory of growth and distribution of the product with the adaptation mechanism consisting not of prices, as neoclassical theory assumed, but of capital accumulation whose rate depends on the behaviour of entrepreneurs.

Rejecting the static premises of the neoclassical school, they proceed from the assumption of the continuous growth and expansion of the economic system, drawing a distinction between the factors which determine long-term growth and the factors which cause short-term, cyclical fluctuations in the economy that are in no sense self-correcting.

Post-Keynesian theory attaches fundamental importance to the existence of monetary institutions capable both of easing and of amplifying the influence of various fluctuations and changes in the economic situation on the course of capitalist reproduction.

Its price-formation system assumes the predominance of major organisations—monopoly capital and trade unions (the post-Keynesians have adopted the idea of US institutionalism in its entirety)—which determine the prices of their goods on a take-it-or-leave-it basis. In consequence, prices, including wages, are turned into parameters which determine the other variables of the economic system.

On the strength of this, they propose a corresponding theory of inflation in which the accent is switched from the purely monetary aspects to the struggle for a redistribution of the national income.

Post-Keynesianism—and this should be especially emphasised—has openly and resolutely rejected the be-all of the neoclassical school, the theory of marginal productivity and marginal utility, the basis on which the neoclassical school erected its whole edifice of production, resource employment, product distribution and price-formation. This break was most manifest, first, in the elaboration of a new theory of economic growth and product distribution, and second, in the development of a new approach to the theory of value involving a revival of Ricardianism. These two aspects of post-Keynesianism which bring together the macroeconomic and microeconomic sections of its economic theory system deserve special consideration.

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[1] Ibid., pp. 4-5.

At the same time, despite the fact that many of its adherents have displayed much interest in Marxism and have even tried to include some of its elements in the new synthesis, post-Keynesianism has, in effect, stopped short of advancing the whole way to Marxism. While proclaiming the need to reckon with social relations and processes, they have not gone beyond a recognition of some existing institutions and have not delved into the essence of the relations of production under capitalism, so effectively rejecting the whole categorial apparatus of Marx's abstract analysis.

The post-Keynesians have contrasted the theoretical system with neoclassical orthodoxy and traditional Keynesianism and have tried to formulate a more realistic theory. This has inevitably impelled them to the maximum radicalism that is possible within the framework of bourgeois economics, to a critical realism in their assessments of the capitalist economy.[1] But it is the framework of bourgeois ideology which ultimately acts as a constraint on their good intentions, hampering any genuine scientific analysis of capitalism and directing their efforts to seek new ways of salvaging it.

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[1] In this context, let me emphasise the following. Although post-Keynesianism is having some influence on left-radical economics, there is a big difference between them. Whereas all of the former's criticisms addressed to orthodox economics and capitalism as a whole are merely designed to refurbish the theory and reform the economic system, the left-radicals reject both the theory and practice of capitalism.

The post-Keynesians' class stand is most manifest on the questions of economic policy. It is true that this is the least elaborated part of the new system, although it lays claim to formulating the "right" economic policy. Moreover, here again there is bound to be—and already is—a fairly broad spectrum of views. On the whole, the post-Keynesians insist on further "improving" the mechanism of capitalist economic regulation. Alfred S. Eichner has emphasised, for instance, that the post-Keynesians—in contrast to the conservatives and the liberals—want a more egalitarian distribution of income and a curb on the destructive effect of market competition, without demanding—in defiance of the left-radicals—any fundamental changes in the institutional structure. He notes and not without reasons—that all the existing political trends—conservatives, liberals and radicals—will be disappointed with the conclusions that can already be drawn on the basis of post-Keynesianism today. He writes: "Conservatives, for example, will not be happy with the conclusion that the distribution of income can be significantly altered without impairing the productivity of the system. Liberals will not be happy with the notion that competitive markets are not essential to the efficient working of the system. And radicals will not be happy with the idea that the system may be stable even without a fundamental transformation of institutions".[1]

But, Eichner warns, one should not exaggerate the degree of consensus even on these broad questions.

It is true that on one issue—control of inflation—all the post-Keynesians are of one mind. They believe that it is impossible to cope with inflation only through the use of the traditional methods of limiting demand and sacrificing, for that purpose, the rate of output growth and volume of employment. The traditional methods of bourgeois monetary policy need to be supplemented with incomes policy. It is true that the post-Keynesians also speak of some "fair" incomes policy that would result from a voluntary agreement by all the parties concerned (monopolies, trade unions and the government) on the rate at which their incomes increase in accordance with definite targets in labour productivity growth. In another article, Eichner writes: "An incomes policy needs to be preceded, at the political level, by some minimal societal agreement as to how the gains from economic growth are to be distributed. The fact that the market alone is incapable of rendering this judgement is what makes an incomes policy essential."[1]

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[1] *Challenge*, May-June 1978, p. 10.

But the "societal agreement" on which bourgeois governments have always pinned their hopes boils down in practice to attempts to gear the interests of the working class to those of capital by imposing some form of wage controls which evoke resolute protests on the part of the working class.

The incomes policy is not a self-contained element of post-Keynesian programmes; they also advocate the tying in of incomes policy with growth policy as a whole, including the policy which determines the rate and structure of investment. This implies the need, they say, for "national planning" so as to invest government regulation with the centralisation, co-ordination and long-term horizon which it lacks.

Consequently, post-Keynesianism advocates a reformist programme designed substantially to expand and "renew" government intervention in the economy.

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[1] *Challenge*, May-June 1979, p. 51

CHAPTER EIGHT

POST-KEYNESIANISM ON THE PROBLEMS OF ECONOMIC GROWTH AND DISTRIBUTION

1. "Antimarginalist Revolution"

In bourgeois economics, the development of post-Keynesianism involves a revival of interest in national income distribution between classes in the society, and the emergence of new aspects in the analysis of this problem.

As we have seen, Keynes left distribution outside his ambit, for it related to the institutional conditions which lay beyond the framework of his analysis. He regarded the "fundamental psychological law", which allegedly determines the human propensity to consume, and consequently the propensity to save, as a category exogenously determined by circumstances irrelevant to his analysis.

Harrod and Domar, the founders of the Keynesian theory of growth, also left these "circumstances" unconsidered, preferring to manipulate technico-economic categories inherent in an economy as a solid unisectoral organism.

However, as the mechanism of economic growth was further analysed in depth, many economists naturally asked themselves what was it that determined these "initial data" which economic growth models assumed to be constant, invariable conditions of development. Among these were, in the first place, the dynamic and the share in the national income of savings and consumption, the dynamic of the capital-output ratio, the nature and the motive forces of technical progress and its impact on the main macroeconomic growth aggregates.

The distribution of the national income is a problem that is being made ever more acute by the socio-economic development of capitalism. With the economy monopolised, with price-formation largely depending on the policy pursued by powerful economic associations of monopoly capital, and with the unionised working class being strong enough to stand up for its rights, the struggle for the distribution and redistribution of the national income necessarily assumes forms which affect the mechanism of economic growth as a whole.

Objectively, there is a deep-seated innerconnection between the distribution of the national income, the rate of accumulation and the rate of growth. Stable growth rates require a definite combination of accumulation and consumption and, accordingly, a distribution of the national income between the main classes of the society. This requires a definite correspondence between the dynamic of national economy coefficients, like labour productivity and capital productivity, and the dynamic of the distributive categories—wages and profits.

But under capitalism, these requirements are realised through bitter struggle between opposite class interests, through constant non-realisation which produces profound collisions in the economy, through crises and inflation.

The struggle for national income distribution between labour and capital, and the urge of the major monopolies to increase their share of the "national cake" has a substantial effect on the mechanism of contemporary inflation. For its part, inflation depreciates incomes and makes the working class struggle for higher cash wages a condition for maintaining its real share of the national income.

Today, bourgeois governments, safeguarding the interests of big business, which they identify with those of national production growth as a whole, increasingly adopt "incomes policies" which are regarded as a necessary component of the policy of sustained economic growth. The immediate purpose of "incomes policy" is to stabilise prices, but their long-term strategic task—the basis on which an effort is made to stabilise prices—is to bring about proportions in national income distribution that would help to sustain the desired growth rate. By regulating the growth of wages, bourgeois governments seek to keep the share of profits in the national income high or to ensure its growth so as to sustain the necessary rate of accumulation. The regulation of real wages growth in accordance with the growth of labour productivity has come to be the central element of this policy. Thus, government economic regulation has now come to face the key problems of income distribution. If balanced economic growth is to be ensured, it is said, there is a need to find a satisfactory solution for this acute social problem.

Economic growth under the current scientific and technological revolution also tends to sharpen a number of other social problems relating to distribution. "Poverty in the midst of affluence", a state in which some social groups of the population or entire depressed areas find themselves, becomes especially strident and intolerable. Inequality of distribution becomes a key factor preventing various social groups from obtaining the necessary education and skills without which it is now impossible to escape from the clutches of poverty and penury. At the same time, access to education, including higher education, not only for the social elite but also for broad masses of working people becomes a key factor of growth and technical progress.

For these reasons, the bourgeois state has now been induced to carry out some measures aimed at redistributing the national income so as to ease the most crying manifestations of social inequality.

The connection between economic growth and national income distribution bears on the vital interests of all the classes and social groups in the capitalist society, and that is why no analysis of this problem can be either politically or ideologically neutral.

The theory of national income distribution has gone through several stages. It was central to Ricardo's scientific system, and he regarded it as being fundamental for economics.

In this context, Marx said: "Ricardo, who sought to gain an understanding of contemporary production in terms of its definite social structure, and who is an economist of production *par excellence*, for that very reason declares distribution, instead of production, to be the true matter of modern political economy."[1]

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[1] Karl Marx, *Grundrisse der Kritik der Politischen Ökonomie*, Verlag für fremdsprachige Literatur, Moskau, 1939, S. 18.

Ricardo's theory of distribution may be summed up as follows:

1. When considering the object of distribution, Ricardo held to the principles of the labour theory of value. The "national cake" which is being distributed consists of materialised human labour, of crystallised expended labour-time.

2. Ricardo sought to discover the laws which regulate the distribution of the produce of industry between the different classes of labour, capitalists and landowners. On the strength of rigid static conditions and the operation of the law of diminishing returns, he held that the growth of the income of one section of the society inevitably implied a growth of its share in the aggregate national income and, consequently, a reduction in the share and the level of income of the rest of the society. From this he drew the conclusion that there was an objective basis for irreconcilable class contradictions in the capitalist society.

3. Ricardo's theory, while being essentially static, a fact which inevitably made his long-term forecasts limited or erroneous, nevertheless posed a highly important dynamic problem, that of the relation between economic growth and income distribution. It was on the strength of his study of the uniformities underlying distribution and growth that he painted the dark prospect of stagnant capitalist production. He held that as the population increased and the less fertile lands came to be farmed, there was bound to be a growth of food prices. This went to benefit the landowners, above all, because of the growth of rent. The capitalists' profit, the basis of accumulation and growth of capitalist production, was bound to be reduced, and with it the incentives for further accumulation. Growing prices would have a two-fold effect on wages, both equally harmful from the standpoint of economic growth: either cash wages would go up, and then profits would be even further reduced, or real wages would drop, and this would reduce the incentives for substituting capital for labour, and conseqently, the incentives for accumulation. In either case, there would be a slowdown in the accumulation of capital and in economic growth.

These basic propositions of Ricardo's theory of distribution, especially the first two, explain why it was accepted as one of the sources of the economic theory of Marxism.

In bourgeois economics, the theory of national income distribution—like the theory of value—developed along altogether different lines. In the 1870s came the so-called marginalist revolution, which for decades enshrined in bourgeois economics the neoclassical theory of distribution based on the concept of marginal productivity. The basic categories of this theory and a critique of its socio-economic premises and conclusions were given in Chapter Five.

Let us take a closer look at the content and evolution of this theory precisely as a theory of national income distribution. Let us recall that in accordance with this theory the income of each production factor (labour, capital and land) is determined by its "price", which is, for its part, proportional to its marginal product. The price of the production factor and its quantity (i.e., supply) also determine its share in the aggregate social product. Thus, this theory switched the great and multifaceted problem of distribution into the sphere of microeconomic conditions determining the pricing of the production factors. It not only stripped the problem of its social and class aspects, but also of the aspects relating to growth and the dynamic of capitalist production.

Indeed, the relatively independent problem of distribution has, for all practical purposes, disappeared from the neoclassical theory of distribution; it has been converted into a purely technical process ensuring the receipt by each production factor—through the corresponding price-formation mechanism—of the product it has created. Here is how the change of the whole approach to the analysis of the production and distribution is described by the Italian economist Alessandro Roncaglia.

Although his own interpretation of the classical approuch to economic analysis, I think, has an essential flaw—behind the classics' production approach, he fails to see the deeper foundation, the foundation of value, which was subsequently developed by Marx—his description of the change in the whole logic of analysis is correct. "The basic classical vision of production as a circular process was replaced in neoclassical theory by the conception of a one-way process, starting from the availability of scarce resources and ending with satisfaction of consumers' tastes. Economics, according to neoclassical theorists, was to become an exact science like physics, concerned with the optimal allocation of scarce resources among alternative ends. Within such a framework, the objective approach to value (based on the physical costs of production) which prevailed in classical political economy was supplanted by a subjective approach, based on consumers' tastes (utility maps). The concept of a surplus over the inputs necessary for production disappeared; the theory of distribution was no longer concerned with the division of such a surplus among the leading classes of society, but rather became a particular application of price theory, related to the 'prices' of the various 'factors of production' (land, labour, and capital)... Relative prices came to be interpreted as 'indicators of relative scarcities' of the various goods, instead of being viewed as the rations to which a regular repetition of the production process was linked."[1]

The introduction into the theory of distribution of the production functions and the application of mathematical formalism enhanced its authority and served as a sort of shot-in-the-arm for the decrepit theory, whose unrealistic assumptions were becoming ever more obvious.

The US economist Tibor Scitovsky, explaining why the marginal productivity theory was still on the scene even though no one any longer believed in perfect competition or long-term equilibrium, wrote: "For one thing, its generality and elegance has considerable appeal; for another, it fits in best with our marginalist approach to economics; for a third, the acceptance to the marginal productivity theory of income distribution is closely bound up with the assumption of an aggregate production function whose analytic convenience has enticed many economists to slur over or disregard the objections to it."[2]

What was the effect on the neoclassical theory of distribution of the introduction into the analysis of the Cobb-Douglas production function in its initial form and in its modernised version, with the inclusion of the technical progress factor? The fact that this function gave a good description of the statistical relations between the dynamic of output, labour and captial was taken by the supporters of the neoclassical theory of distribution as empirical proof of at least two of its basic postulates. First, that the prices of the factors corresponded to their marginal product. This postulate was allegedly borne out by the fact that the obtained parameters of distribution α and β or elasticity of labour and capital incomes, were roughly equal to the corresponding shares of wages and profit in the national income. Second, that there was an inversely proportional and straightforward relation between the dynamic of the production factors K and L and their marginal products and, consequently, their "prices" as well. The growth of the capital-labour ratio was connected with the corresponding reduction in the profit-wages ratio.

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[1] Alessandro Roncaglia, "Sraffa and the Reconstruction of Political Economy", *Challenge*, January-February 1979, p. 50.

[2] *The Behaviour of Income Shares. Studies in Income and Wealth*, Vol. 27, Princeton University Press, Princeton, 1964, p. 22.

The fact that a function with constant parameters of distribution (and in the Cobb-Douglas function, α and β are constant) squared with the actual data warranted the conclusion that the relation between the change rate of $\frac{K}{L}$ and the change rate of $\frac{W}{P}$ i.e., the elasticity of substitution, was equal to unity. This meant that any change in the relation between the volume of production factors was compensated by a corresponding change in the relations between their "incomes". An increase in capital stock with respect to labour would tend to reduce profits with respect to wages. As a result, the share of this factor in income would not change. The Cobb-Douglas function was, therefore, used as a theoretical backup for the constancy of national income distribution over the long term.

Let us recall that distribution constancy is one of the "stylised factors" designed to explain and substantiate economic-growth theory. But actual economic development tends to depart from these "stylised factors" and frequently to contradict them. This also applies to the long-term trends in the capital-output ratio and in national income distribution. How are these departures to be explained?

Thus, the conception of non-neutral technical progress was used to rescue the theory above all to explain the highly important socio-economic problem of distribution.

One of the formal indications that the neoclassical theory of production and distribution was untenable was the fact that it failed to allow for, and so to explain, the possibility of changes in national income distribution. If changes in production factor growth rate are paralleled by corresponding changes in their marginal products and so in their "prices"—say, if relative capital growth results in a drop of profits—there should be no change in income distribution. But if national income distribution does change, the implication is that the laws of marginal productivity are inoperative. That was precisely the conclusion drawn by critics of the theory.

However, the advocates of the neoclassical theory of production and distribution now seek to prove that these changes do not have to involve any disruption in the operaton of marginal productivity laws, but may result from the influence of the type of technical progress and the elasticity of resource substitution.

Murray Brown writes: "There are two propositions in the neoclassical tradition which hold that relative shares are the resultant of configurations of non-neutral technological change, the elasticity of substitution and the labour-capital ratio. The first holds that a factor saving innovation, cet. par., reduces the relative share of income of that factor in all cases. The second maintains that if one factor increases in supply more rapidly than another, and if the elasticity of substitution δ is less than unity, then the relative share of the first factor decreases. Of course if δ exceeds unity, then the relative share of the first factor increases; and if δ is equal to unity (the Cobb-Douglas case), changes in the relative supplies of factors will have no effect on the relative shares."[1]

According to the neoclassical theory of non-neutral technical progress, income distribution in favour of profit and an increase in the share of the latter in the national income can occur in two cases:

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[1] Murray Brown, *On the Theory and Measurement of Technological Change*, Cambridge University Press, Cambridge, 1966, p. 181.

– if technical progress is capital-intensive, since the marginal product of capital and so also the rate of profit tend to grow faster than the marginal product of labour and wages;

– if capital tends to grow faster than the population $k > l$ but the elasticity of substitution is so high $\delta > 1$ that the marginal product of capital and the rate of profit decline insignificantly as compared with wages; or conversely, if capital grows more slowly than the population, but the elasticity of substitution is hampered $k < l$, so that the marginal product of labour and the level of wages decline markedly as compared with the rate of profit.

Converse divergencies should explain the redistribution of income in favour of labour and a growth of the share of wages in the national income. According to this theory, the contrapuntal impact of these two effects could leave distribution unchanged.

That is the basis on which the influence of the various forces on income distribution is analysed by Murray Brown, who writes: "Two of the forces that affected relative income shares–non-neutral technological change and the relative supplies of the inputs–executed significant variations over the time period studied. Yet relative income shares themselves displayed much more stability than each of the forces acting on them. Hence, we can ... conclude that a contrapuntal movement in the forces occurred, one that produced a stable or 'linear' time path in the relative income share."[1]

Consequently, the approach in explaining changes in national income distribution is based on the influence of two effects: the effect of technical progress itself and the effect of resource substitution.

However, in actual reality it is virtually impossible to measure the influence of these two effects separately. It is possible to measure the elasticity of substitution as the relation between changes in the capital-labour ratio and the wages-profit ratio. But, first, as I have already said, this relation is not at all identical to that between the dynamic of resources and their marginal products. Second, even if that were so, we are unable precisely to say what actually determined this relation between $\frac{K}{L}$ and $\frac{W}{P}$: the type of technical progress, which has a direct influence on the relation between the marginal products, or the difficulties in the substitution process in consequence of varying degrees of resource availability.

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[1] Ibid., p. 188.

Consequently, the technical progress theory itself has essential defects which hamper the concretisation of the technico-economic factors allegedly determining the processes of distribution, as the theory claims to have done.

The neoclassical theory of technical progress, having somewhat refurbished the neoclassical theory of distribution, still failed to eliminate its fundamental flaw, the conception that production factor incomes are determined by their marginal products.

It was used by the advocates of the apologetic theory of functional income distribution to put more camouflage on the socio-economic nature of distribution involving the relations of exploitation and sharp class struggle in the capitalist society, and closely connected with the basic proportions of capitalist reproduction.

The neoclassical theory of distribution was most sharply criticised by the post-Keynesians. In the 1960s and 1970s, this criticism reached such proportions that it developed into something of an "anti-marginalist revolution" in bourgeois economics.

Let us emphasise that the critical offensive against neoclassical theory was started back in the 1920s. That was when Piero Sraffa wrote his first works critisising the neoclassical theory of prices.

Substantial criticism was levelled against the premises of the neoclassical school—above all the idea of the prevalence of perfect competition and the optimising role of the market mechnism—in the 1930s with the appearance of works by Edward H. Chamberlin and Joan V. Robinson.[1]

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[1] Piero Sraffa, "The Laws of Returns under Competitive Conditions", *The Economic Journal*, December 1926; E. Chamberlin, *The Theory of Monopolistic Competition*, Harvard University Press, Cambridge (Mass.), 1933; Joan Robinson, *The Economics of Imperfect Competition*, Macmillan and Co. Ltd., London, 1933.

The emergence and development of Keynesianism with its new macroeconomic approach and its recognition that laissez-faire capitalism has various internal defects that needed to be remedied through government intervention, also signified criticism of some key premises of neoclassical theory.

However, the "Keynesian revolution", too, failed to shake the basic principles of neoclassical theory, which continued to be fundamental to bourgeois economics and which facilitated the process of "neoclassical synthesis". As a result, neoclassical theory continued to be dominant as a theory of value, as a theory of production factor (labour and capital) price-formation, and as a theory of the functional (i.e., class) distribution of the national income between labour and capital.

It is these spheres in which neoclassical theory prevailed and which constituted the bulwark of bourgeois apologetics as a whole that became the target of the most acute criticism by the post-Keynesians in the 1960s and 1970s.

The opponents of the marginalist theory of distribution have criticised all its basic assumptions. The fact that the neoclassical theory of distribution ignored the absence of perfect competition and the activity of the monopolies, trade unions and the state has been subjected to withering criticism.

Another important critical argument is that the neoclassical theory of distribution tacitly transfers relations arising at the microlevel to the macrolevel. It may well be logically assumed that the demand for production factors (determined by the production function, i.e., the technological conditions of production in a given firm) interacting with the supply of production factors, as determined by "tastes, usages and preferences" tends to shape their prices and, consequently, the share of their income in the product. But at the macrolevel, supply and demand cannot be established through a mere summing-up of these microeconomic indicators. Supply and demand are themselves subjected to substantial influence by national income distribution. This produces a vicious circle which neoclassical theory has been unable to break.

In the past few years, there has also been sharp criticism of various other logical and formal aspects of the neoclassical theory of distribution, chiefly by Piero Sraffa[1] and Joan Robinson.[2]

Their criticism was directed at the main dogmas of the neoclassical theory of distribution:

first, that the incomes of the production factors and their distribution could be deduced from the conditions of their supply, from their "productivity"; and

second, that there was a straightforward relation between the ratios of the production factors and their incomes, so that an increase in the capital-labour ratio $\frac{K}{L}$ was necessarily paralleled by a reduction in profit with respect to wages $\frac{P}{W}$, and vise versa.

Concerning Dogma No. 1, it has long since been under fire from the opponents of the neoclassical theory of distribution. The substance of their criticism is that the supply of production factors and their measurement is influenced by the relations of distribution. That is why neoclassical theory found itself in a vicious circle. The US economists E. K. Hunt and Howard A. Sherman wrote: "The most obvious criticism, which has been made over and over for decades (and continuously ignored), is that the demand for commodities and the supply of factors are significantly influenced by the distribution of income. This involves a circularity from which the theory, on the microlevel, could never escape. Nevertheless, the theorists did not hesitate to aggregate the categories of marginal productivity distribution theory in order to provide a macroeconomic ideology justifying the class distribution of income between profits and wages."[3]

The measurement of the physical magnitude of capital was the central point of the criticism of this vicious circle. Was it possible to measure the physical magnitude of capital independently of the categories of distribution? The neoclassicists held that it was possible, and their opponents, that it was not.

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[1] Piero Sraffa, *The Production of Commodities by Means of Commodities*, Cambridge University Press, Cambridge, 1960.

[2] Joan Robinson, "The Production Function and the Theory of Capital", *Review of Economic Studies*, Vol. XXL, (2), No. 55, 1953-54.

[3] E. K. Hunt and Howard J. Sherman, "Value, Alienation and Distribution", *Science and Society*, No. 1, Spring 1972, p. 42.

According to the neoclassical theory, the volume of capital is usually defined as capitalised income on the strength of the magnitude of interest on capital assets (identified with the rate of profit in conditions of equilibrium). Consequently, in order to determine the value of capital assets, interest rate must be known in advance. At the same time, the theory lays claim to explaining the formation of production factor incomes, including interest.

Full-scale criticism of this circularity was contained in Joàn Robinson's 1954 article "The Production Function and the Theory of Capital". In the 1970s, she wrote a series of articles backing up and driving home her arguments in response to the amendments and corrections introduced in that period by the neoclassicists into their theory of capital and marginal productivity theory.[1]

She asserted that it was impossible to find a unit for the measurement of capital, i.e., an index that would not depend on relative prices or the relations of distribution.

The prices of capital goods by means of which this whole motley mix is reduced to a single whole include profit and wages. A change in their ratio has an effect on prices and on the magnitude of capital, without having any substantial effect on its physical properties and its "productivity".

That being so, the theory which claims to explain the laws of distribution on the strength of factor "productivity" is not entitled to operate with value indicators.

The same idea was dealt with in greater detail and provided with a rigorous mathematical substantiation in Sraffa's *The Production of Commodities by Means of Commodities.* Considering the process of social reproduction and price-formation on the basis of goods circulation schemes, he, first, gave a new approach to computing the magnitude of capital on the basis of the prices of production of the sum total of the intermediate goods which are used to produce the final product; and second, he visually demonstrated that the latter–if computed on the basis of the prices of production—is influenced by distribution: a change in the ratio between profits and wages tends to change the prices of production and, through these, also the value of the capital measured on the basis of these prices.

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[1] Joan Robinson, "The Measure of Capital: The End of Controversy", *The Economic Journal*, September 1971, pp. 597-602.

In a study aid on economic theory, Joan Robinson and John Eatwell emphasised: "The point of Sraffa's argument was to show that the 'value of a stock of capital', in general, has no meaning independently of the distribution of net product between wages and profits; so there is no meaning in the idea that the rate of profit is determined by the 'marginal product of capital'."[1]

Let us consider the criticism of Dogma No. 2 in greater detail.

A fundamental proposition of neoclassical theory, as I showed above, is that there is a direct connection between the capital-labour ratio and the profit-wages ratio, because profit and wages are regarded as the value expression of the marginal products of capital and labour. A change in the capital-labour ratio results in a change in the ratio of their marginal products, and consequently, in the profit-wages ratio. This connection, according to neoclassical theory, is reciprocal: following a change in the wages-profit ratio (labour becomes more costly), there is an equivalent change in the capital-labour ratio in consequence of less costly capital being substituted for more costly labour. From this it follows that a very definite rate of profit corresponds to a definite capital-labour ratio.

All of this suggests that if there is a choice of production methods differing in capital-labour ratio, the selected method of production will, provided profit is maximised, be determined by the ratio of the profit rate to wages.

What happens if this ratio changes? Neoclassical theory asserts that with an increase in the wages-profit ratio (a relative drop in profit rate) labour will be replaced by capital, i.e., there will be a switch to more capital-intensive production methods, and the assertion is that this relation is monotonous, straightforward.

Sraffa disproved this. The point is that neoclassical theory starts from the assumption that capital is a homogenous mass, i.e., that capital consists of assets with similar periods of circulation, with the same deadlines of introduction, with the same efficiency, etc. It is only this kind of "jelly-like", "malleable" capital that can lend itself to constant substitution under changing relations between the prices of production factors. But if the premise that capital is homogeneous is rejected, this dogma of neoclassical theory comes down as well. Discussions of this problem in bourgeois economics proceeded in connection with the discovery of a "switching of techniques" effect. Sraffa's main argument was that it was impossible to deduce a definite relation between the capital-labour ratio and the profit-wages ratio, for it also depended on the production techniques. If the production process is considered in time, in the light of the number of production stages, each of which is characterised by a different capital-labour ratio now one technique and now another could be made by a change in the rate of profit. A lowering of the profit rate could cause a switch to a new and more capital-intensive technique, but may also cause a reswitching to the old, less capital-intensive technique. That is something neoclassical theory has never made allowance for.

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[1] Joan Robinson, John Eatwell, *An Introduction to Modern Economics*, McGraw-Hill Book Company Ltd., London, 1973, p. 184.

But if the capital-labour ratio and the rate of profit turn out not to be connected as rigidly as the neoclassicists assumed, this upsets the connection between marginal products and prices on which their whole theory of income distribution rests.

Many economists believe that criticism of the premise concerning the homogeneity of capital and the description of the "switching of techniques" effect were crucial in overthrowing the whole of the neoclassical theory of distribution. Thus, the radical US economists E. Hunt and H. Sherman wrote: "Although the arguments were very esoteric, the general principles established are rather simple and are of monumental importance in the history of economic doctrines. They represent the logical and theoretical destruction of the intellectual tradition, going back to Jevons and the Austrians, which has dominated orthodox economics for the last 100 years."[1]

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[1] E. K. Hunt and Howard J. Sherman. "Value, Alienation and Distribution", Op. cit., p. 45.

In a survey of these debates, G. C. Harcourth wrote: "Once heterogeneity of capital goods is introduced, the parables based on jelly no longer apply. In particular, it can no longer be argued that 'capital' is paid a marginal product which equals r (even in an equilibrium situation) ... the finding ... destroys the foundations of the traditional demand and supply approach to the theory of distribution."[1]

The logical demonstration that the neoclassical theory of production and distribution was untenable did much to advance the criticism of neoclassical theory as a whole.

While giving credit to this formal logic criticism of the neoclassical theory of distribution, let us note that Marxism carries on its critical argument against the theory in different and more fundamental terms: it criticises the very idea of capital productivity, an idea which was refuted by Marx.[2] The Marxian theory of value shows the fundamental reason for which the idea of capital productivity is inherently contradictory. The Marxian theory of value asserts that living labour alone can create new value. Capital, as a value magnitude, does not create new value, but is only a condition for its appropriation. Indeed, the theory of capital productivity is based on a mixing of the value and physical aspects of the existence of capital. Precisely this mixing has led to the claim that capital yields a product "of its own" in the form of a part of the produced value. It is based on the misconception of the fact that capital goods (primarily, instruments of production) can increase the quantity of the products turned out, i.e., the quantity of use-values.

Mixing the physical and value elements is, in fact, the cause behind the serious flaws in the inner logic of neoclassical theory. That is why it is impossible to use the marginal productivity theory as a basis for constructing a logically uncontradictory theory of distribution, because any measurement of the "marginal productivity of capital" implies a measurement of the "value" of capital, and it turns out that the latter, for its part, depends on the categories of distribution. In this way the theory truly runs in a vicious circle produced by the vulgar and apologetic view of capitalist relations of production and a denial of exploitation as the appropriation of the unpaid labour of the working class.

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[1] G. C. Harcourth, "Some Cambridge Controversies in the Theory of Capital", *The Journal of Economic Literature*, Vol. VII, No. 2, June 1969, p. 394.

[2] See: Karl Marx, *Capital*, Vol. III, pp. 814-31.

2. The Post-Keynesian Theory of Growth and Distribution

In any consummate theoretical system, production and distribution are tied in with each other.

In Marxian theory, this is effected on the basis of the categories of the labour theory of value: the volume of newly created value is determined by the magnitude of necessary and surplus-value created by the workers, and this, for its part, is the basis for its subsequent distribution. The necessary product goes to the working class—if one abstracts oneself from all the subsequent complexifying factors, including the factors of political struggle. The rest goes to the capitalist class.

In vulgar neoclassical theory, this tying in is effected on the basis of marginal product categories: the volume of production factors (their rate of growth) and their marginal productivity determine output as also the relative shares of the factors, that is, their distribution.

The post-Keynesians made an attempt to produce a theory in which the interconnection between the rates of growth and distribution was effected not on the basis of the operation of some internal categories and laws, but on the basis of actually existing institutions determining the capitalists' urge for accumulation and the workers' struggle for a share of the product in the national income. In other words, they made an attempt to do not only without the labour theory of value, but also without the vulgar categories of marginal product. This approach is characteristic of the writings of Joan Robinson, Nicholas Kaldor, Luigi Pasinetti and J. A. Kregel.[1]

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[1] See: Joan Robinson, *The Accumulation of Capital*, London, 1956; Nicholas Kaldor, "Alternative Theories of Distribution", Op. cit.; L. Pasinetti, *Growth and Distribution. Essays in Economic*

Michal Kalecki, as I have already said, formulated the principles of his macroeconomic theory of the dynamic of the capitalist economy in 1933-1935, and his starting methodological basis was Marx's theory of reproduction. He strove to tie in the determination of national income level—in the light of the conditions of realisation—with national income distribution. He was the first to propose an equation showing the relation between the growth of investment and the share of consumption by various classes in the society:

$$X_t = \frac{X_t - w}{(1-a)\,(1-q)} \ ,$$

where a is the share of wages and salaries in the national income (it is assumed that the whole of their income is spent on consumption), and

q is the share of profit consumption.

Consequently, in contrast to Keynes's multiplier, Kalecki's is differentiated. He wrote: "Gross income or product increases more than investment owing to the effect of the rise in investment upon capitalists' consumption (factor $\frac{1}{1-q}$) and upon workers' income (factor $\frac{1}{1-a}$). Since workers' consumption is here assumed to be equal to their income, this means that income increases more than investment because of the influence of the increase in investment upon capitalists' and workers' consumption."[1]

Similarly to this theory for determining national income level, Kalecki formulated a theory for determining profit level, depending on investment and capitalists' consumption.

His attention was focussed on national income distribution between profit and wages. He strove to establish the basic macroeconomic and socio-political determinants behind national income distribution, and to do this in a

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Theory, London, 1974; J. A. Kregel, *The Theory of Economic Growth*, Macmillan & Co. Ltd., London, 1972.

[1] M. Kalecki, *Theory of Economic Dynamics*, New York, 1968, p. 62.

form that lent itself to statistical verification. Much importance in his computations attaches to the organic composition of capital (ratio of material inputs to wages) and the extent to which the economy is monopolised. He believed that the factor working against monopolisation was the growth of the trade-union movement of the working class (an idea further elaborated by Joan Robinson).

It was these interconnections between distribution and growth that drew the attention of the post-Keynesians.

There are two main ideas underlying the post-Keynesian models of growth and distribution:

First, growth rate depends on national income distribution. Since income and its increase depend on savings, while total savings are a sum total of savings from wages and profits, and since the propensity to save among recipients of wages and profits is different, changes in distribution will produce changes in total savings. Consequently, the distribution of the national income will have an effect on its growth.

Second, income distribution itself is a function of saving rate. This rate determines the rate of profit, and, consequently, the share of profit in the national income. The share of wages and the wage fund are determined as residual magnitudes, although the working-class struggle can modify these correlations.

There is evidence of obvious evolution on this matter among the post-Keynesians. Whereas capital with its urge for saving was the crucial factor of distribution in the earlier theories (Joan Robinson), today increasing importance is being attached to the trade unions, which are allegedly capable of exerting the same influence on income distribution as monopoly capital.

There is here, therefore, evidence of a distincion from neoclassical theory: there are no marginal product categories determining profit rate and wage rate. Growth rate is determined not just by the resource dynamic and the pace of technical progress, but by the intensity of saving and the propensity to save.

Let us consider Kaldor's model of economic growth and distribution, which starts from the assumption that, under equilibrium, expected investment should be equal to expected savings (*ex ante* I = *ex ante* S). Since the income of the society is distributed between different classes, each of which has its own propensity to save, this equilibrium can be materialised only under an appropriate distribution of income. In other words, growth rate and income distribution turn out to be inherently connected categories. On the one hand, the relations of distribution determine the given level of social savings, and consequently, of investment and the economic growth rate. On the other hand, achievement of a definite rate requires a definite level of investment and, consequently, of savings, and consequently also, of a corresponding distribution of income (provided the propensity to save in each class of income recipients remains unchanged). This relation is illustrated by the following system of equations. With the given technique of production and the given amount of cash wages, net income may be expressed as the sum total of wages and profits: $Y = W + P$ (1). Since the magnitude of savings is determined by the level of income, and the latter is distributed between wages and profit, the magnitude of savings will be made up of the saved share of wages and profit. But since savings must be equal to investment,

$$S = s_w W + s_p P = I.$$

Expressing W through $Y - P$, we obtain this equation:

$$S = s_w(Y - P) + s_p P = I \text{ or } S = s_w Y + (s_p - s_w)P = I. \quad (2)$$

The share of savings in income (all parts of the equation are divided by Y) will be equal to $\frac{S}{Y} = s_w + (s_p - s_w)\frac{P}{Y} = \frac{I}{Y}$; this makes it possible to obtain the equation of the share of profit in income:

$$\frac{S}{Y}\frac{1}{(s_p - s_w)} - \frac{s_w}{(s_p - s_w)} = \frac{P}{Y} = \frac{I}{Y}\frac{1}{(s_p - s_w)} - \frac{s_w}{(s_p - s_w)} \cdot (3)$$

Kaldor then assumed, for the sake of simplification, that the saved share of wages is equal to zero ($s_w = 0$). Then

$$\frac{S}{Y}\frac{1}{s_p} = \frac{P}{Y} = \frac{I}{Y}\frac{1}{s_p}. \qquad (4)$$

Assuming that the whole of profit is saved, the expression is further simplified to

$$\frac{S}{Y} = \frac{P}{Y} = \frac{I}{Y}. \qquad (5)$$

What is the significance of this system of equations? It expresses a very important idea of post-Keynesian theory. Since investment is the crucial determinant of capitalist production, it is the capitalists' propensity to invest, the share of investments in income $\frac{I}{Y}$ that determines the share of profit in income $\frac{P}{Y}$ and also distribution as a whole. J. A. Kregel commenting on this fundamental equation of post-Keynesian theory wrote: "Thus, in the simplest case where $s_w = 0$ and $s_p = 1$, whatever the exogenously given value of I, since $S = I$ and $S = P$, the share of profit in income must adapt to equal the share of investment in output, the share of wages adapting to this priority."[1] Consequently, wages and their share in the national income are a secondary magnitude, depending on the share extracted by the class of entrepreneurs gripped by the urge for saving. This conclusion is not altered by the introduction of consumption from profit. Kregel writes: "The higher the proportion of investment in output, the higher the share of profits in income and the lower the share of wages in income; the higher the propensity to consume out of profits, the higher the share of profits in income and the lower the share of wages in income."[2]

This line of dependencies—from investment to profit and to distribution—was inherited by the post-Keynesians from Kalecki, who wrote that it is investment and consumption that are the parameters which lend themselves to management by the capitalist class, and that is why they determine all the other indicators of the system, including income distribution. "Does it mean that profits in a given period determine capitalists' consumption and investment or the reverse of this? The answer to this question depends on which of these items is directly subject to the decisions of the capitalists. Now it is clear that capitalists may decide to consume and to invest more in a given period than in the preceding one, but they cannot decide to earn more. It is, therefore, their investment and consumption decisions which determine their profits and not vice versa."[1]

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[1] *Modern Economic Thought*, Ed. by S. Weintraub, University of Pennsilvania Press, 1978, p. 425.

[2] Ibid., p. 429.

On the strength of the above system of equations, Kaldor analyses two basic problems: the problem of economic equilibrium, and the factors determining growth rate over the long term.

As for equilibrium, Kaldor assumes that the introduction of a distribution mechanism into the model—when $s_p > s_w$—makes the system more stable and more capable of automattically restoring equilibrium. Here, his growth model differs substantially from the Harrod-Domar "knife-edge" model. Kaldor believes that any change of I in relation to S—which in the Harrod-Domar model tends to produce cumulative decline or growth in production—triggers off the mechanism of income redistribution, which adapts S to the new level of I.

Inflationary processes have an important part to play in this redistribution of income. Kaldor assumes that rising investments and general growth of demand under full employment will result in a faster growth of prices than of wages, thereby changing the distribution of income in favour of profit and reducing the share of the working class. Since savings from profit are higher than those from wages, this will result in a growth of savings. The equality of S to I will be restored. If, conversely, investment and aggregate demand decline, prices will tend to drop faster than money wages, distribution will tend to change in favour of the workers, savings will decline, and the equality of S and I will also be re-established (in Western economic writings, this mechanism is known as the "Kaldor effect").

Consequently, in this short-term model, national income distribution is a function of the fluctuating growth of investment and aggregate demand, and also of the dynamic of relative prices.

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[1] Ibid., p. 426.

In the analysis of long-term growth factors, national income distribution likewise has the crucial role. It follows from the equation given above that, provided s_p and s_w are constant, any increase in the saving ratio and, so, in growth rate, will require an increase in the share of profit in income $\frac{P}{Y}$, while any reduction in the saving ratio will tend to reduce it. Thus, the rate of saving is a key factor behind the long-term tendencies in national income distribution.

Kaldor's formula showing the dependence of distribution on the saving ratio contains the $\frac{1}{s_p - s_w}$ coefficient, which he difines as the "coefficient of sensitivity of income distribution",[1] since on it depends the extent to which changes in accumulation rate influence national income distribution. The greater the excess of s_p over s_w, the lesser the influence, and the closer s_p is to s_w, the greater the dependence of distribution on the rate of saving.

Kaldor's model includes essential technico-economic interrelations which take shape in certain conditions between investment, economic growth and income distribution. But one should also bear in mind the rigid assumptions behind the model which do not always correspond to the actual state of things. For instance, the re-establishment of short-term equilibrium on the basis of the "Kaldor effect" implies that prices change to a greater extent than wages: with a high market situation, they tend to rise faster than wages, and in a recession, they drop faster (or rise slower) than wages. However, this notion of the movement of prices and wages is not grounded in fact and may correspond to reality only by pure chance. With monopoly domination and the general inflationary growth of prices, and also pressure from the trade unions seeking to maintain the gains won by the working class and safeguard the growth of real wages, there can, in fact, be no such dynamic in the price-wage relation as Kaldor describes. That is why the mechanism of economic adaptation through changes in income distribution is an abstraction which does not accord with reality.

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[1] Nicholas Kaldor, "Alternative of Theories of Distribution", Op. cit., p. 95.

Furthermore, it follows from Kaldor's model that any increase in growth rate over the long term can be achieved only through a redistribution of the national income in favour of profit and an increase in the saving ratio. Conclusions of this kind, outside the context of realities, may be used to vindicate the reactionary policies pursued by the monopolies and the capitalist state, when the working people's vital interests ostensibly have to be curbed for the sake of economic growth.

Actually, any increase in growth rate requires an increase in saving ratio only if the capital-output ratio remains constant or increases. But statistical analysis shows that in some periods growth rate can also be increased under a falling capital-output ratio, through greater efficiency of capital expenditures, which reduce the need for saving.

Kaldor's abstract model also completely ignored the vast unproductive expenditures which burden the capitalist society today, especially government military spending. The introduction into his model of government revenues and expenditures could bring out a source for increasing the saving ratio other than the working people's income.

Finally, Kaldor's assumption of invariable shares of saved income—s_p and s_w—is much too rigid. Empirical analysis of this problem shows that these shares tend to change, depending on income growth and on many other factors.

In his writings, Kaldor seeks to clarify the basic causes for the stability of national income distribution beginning with the late 19th century. He says: "In fact no hypothesis as regards the forces determining distributive shares could be intellectually satisfying unless it succeeds in accounting for the relative stability of these shares in the advanced capitalist economies over the last 100 years or so, despite the phenomenal changes in the techniques of production, in the accumulation of captial relative to labour and in real income per head."[1]

He tries to find these causes in the purely technico-economic laws of growth. In order to simplify the reasoning, he assumes that the share of savings from wages is zero $s_w = 0$. Making use of the equation for the share of profit in income $\frac{P}{Y} = \frac{I}{Y} \cdot \frac{1}{s_p}$ (4) and assuming, in accordance with Harrod's equation that the saving ratio $\frac{I}{Y}$ is determined by the rate of growth and the capital-output ratio $\frac{I}{Y} = C_r \cdot G$, he obtains the following expression $\frac{P}{Y} = \frac{1}{s_p} \cdot C_r \cdot G$ (5). According to this equation, the share of profit in income is determined by the share of savings from profit s_p, the growth rate G and the capital-output ratio C_r. If the first two indicators remain constant, the stability of the share of profit in income will then be determined by the stability of capital coefficient.

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[1] Nicholas Kaldor, "Alternative Theories of Distribution", Op. cit., pp. 83-84.

To explain and substantiate this stability, Kaldor introduces his famous "technical progress function", which is based on the assumption that technical progress is in itself never either capital-intensive or capital-saving. The dynamic of capital-intensiveness depends on the use of available technological potentialities. Optimal use of these potentialities, which the economic system seeks to do, is always marked by an equal increase in capital and output, and consequently, by a tendency for capital-output ratio to remain stable.[1]

Increase in output will be less than increase in capital where the technological potential has not been fully utilised. In these conditions, incentives appear to increase the saving rate, which leads to fuller use of the technological potentialities, a higher rate of output growth and stabilisation of the capital-output ratio.

On the strength of this, Kaldor suggests the conception of a two-stage development of capitalism, which is briefly as follows. At the early stage of capitalist development, the volume of saving was inadequate for the full use of technological potentialities. That is why that stage was marked by a growing capital intensiveness, a growing rate of profit and a declining share of wages in the national income. The second stage, which opened at the end of

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[1] See: Nicholas Kaldor, "A Model of Economic Growth", *The Economic Journal*, December 1957, p. 600.

19th century, was marked by an alleged correspondence between the volume of saving and the flow of technological potentialities. This led to a stabilisation of the capital-output ratio, a stabilisation of the rate of profit and the share of wages in income, the latter occurring when the growth of wages kept pace with the growth of labour productivity.

Many of Kaldor's assumptions are doubtful, like the relation between saving and the use of technological potentialities at the different stages of capitalist development. One can hardly agree that in the 19th century such use of technological potentialities as would have equalised the increase in product and capital was blocked only by the scale of capital accumulation. After all, technological potentialities are not some extraneous element developing independently of the state of economic development. The growth of the capital intensiveness in the 19th century, which continued up until the 1920s, resulted from industrialisation, which brought about a profound structural modification of the capitalist economies. It went forward as the outstanding technical achievements of the period were materialised on the basis of capital accumulation.

The reduction in the dynamics of the capital-intensiveness and its stabilisation in the 20th century are based on the deep-going changes in the nature of technical progress inducing a vast enhancement of the efficiency of material inputs, a rising capital return and ever higher labour productivity.

While Kaldor himself remarks on the excessively generalised nature of his conception, one could not help noting that its fundamental flaw amounts to more than that: it is his attempt to fit into the rigid framework of purely technological change the whole complexity of socio-economic changes which marked the development of laissez-faire capitalism into monopoly and state-monopoly capitalism, changes which had an effect on the distribution of the national income. That is the basic methodological defect of Kaldor's theory of distribution.

What was Joan Robinson's contribution to the analysis of this problem?

Let us consider the theory of growth and distribution which was set forth in one of her works.[1] Here, the central problems are the interconnection between national income distribution and economic growth, the dynamic of wages and technical progress, monopoly and competition. She examined the conditions for dynamic equilibrium, i.e., balanced growth, in organic connection with the dynamic of wages and the factors which determine it.

A noteworthy feature of Robinson's work is the introduction into the analysis of a number of institutional factors: monopoly, as a factor of price-formation; income distribution, as a factor determining the level of savings; the specific functions of firms and their urge for survival and growth, as the factors determining the pace and rate of investment, and the uncertainty characteristic of anarchic capitalist production.

Outwardly, her method in analysing growth and capital accumulation reminds one of Marx's abstract method. She starts by considering the accumulation of capital—the basis of expanded reproduction—in more abstract terms, assuming the accumulation of the whole of profit and the absence of crises, and then goes on gradually to introduce a number of complexifying parameters typical of actual realities (cyclical fluctuations, consumption from profit, the influence of finance and trade, the movement of prices, etc.). However, the resemblance is purely superficial, for the categories with which she operates in her theoretical constructs—while they do take account of some of the socio-institutional specifics of capitalism—amount mainly to a generalisation of superficially observed production interconnections.

In order to clarify the basic laws of accumulation, she proposes a number of limiting assumptions, including the absence of government intervention in the economy, the existence of only two classes—workers and employers—and the absence of consumption from profit, which goes entirely into capital accumulation. She divides social production into two sectors: the investment goods sector and the consumer goods sector. In this division of the social product in natural form she also tries to follow in Marx's wake, but having from the outset abandoned the

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[1] Joan Robinson, *The Accumulation of Capital*.

Marxian theory of value, which helps to determine the value structure of the social product as a basis for establishing the relation between the physical and the value forms in the process of capital accumulation, Robinson constructs a scheme which does not reflect the inner laws of capitalist reproduction.

The abstract method used by Joan Robinson does not, in effect, help to clarify the internal categories of the capitalist mode of production which express the substance of its relations of production: value, surplus-value, wages as the converted form of the value of labour-power, and so on.

She divides the output of each sector not by value but by wages W_1 and W_2 and quasi-rent Q_1 and Q_2, which is a mix of such different categories as depreciation and profit. She presents the proportions between the first and the second sector in the form of the following equations: the value of the annual output of the second sector is equal to $W_1 + W_2 = P_2$, i.e., to the wages bill in the first and the second sectors, while $W_1 = Q_2$, i.e., the wages bill in the first sector is equal to the quasi-rent (profit and depreciation) in the second sector.

Thus, Robinson's model of expanded reproduction is determined by two elements: first, the absence of any value division of the social product, and second, neglect of such an important aspect of realisation as consumption by the capitalist class. She examines the interconnection between distribution and economic growth in a broader context. While Kaldor connects the distributive proportions above all with accumulation, Robinson regards them also as a factor which determines the scale of effective demand and, consequently, the conditions for the realisation of the social product.

The initial premises of Robinson's model are the following:

1. The economy consists of two sectors, one turning out investment goods and the other consumer goods.
2. The technique of production is given, and so the technological coefficients are fixed.
3. As in Kaldor's model, investment is the main and motive force of capitalist production. Consequently, the investment rate $\frac{I}{Y}$ is the key external variable.

Her assumption is that the value of the final product in each sector is made up of wages and quasi-rent, which consits of profit and depreciation.

$$W_1 + Q_1 = Y_1 \qquad W_2 + Q_2 = Y_2.$$

Between these two equations—in the event of simple reproduction, the whole of wages is consumed and profit is invested—the following connections are established:

$$W_1 + W_2 = Y_2 \quad W_1 = Q_2 \quad Q_1 + Q_2 = Y_1.$$

The question is how these connections are established.

If $\frac{I}{Y}$ is given, under the given technique of production it will determine the distribution of labour between the two sectors of social production, i.e., $\frac{W_1}{W_2}$. Since W_1 is determined, under the given labour productivity Y_1 is also determined, and consequently also Q_1, since $W_1 + Q_1 = Y_1$. Furthermore, W_1 will determine the value of Q_2. But the relation between them, expressed in prices, will be such as to ensure a rate of profit in Sector II which is not less than that in Sector I. Thus, this equation, together with the profit rate in Sector I, will also determine the price-formation processes.

As a result, $Q_1 + Q_2 = Y_1$. If depreciation is subtracted from the left part of this equation, and replacement from its right part, in the left part we shall have the amount of profit, and in the right part, net accumulation.

$$P = P_1 + P_2 = \Delta K.$$

Dividing everything by K, we obtain $\frac{P}{K} = \frac{\Delta K}{K}$, i.e., the rate of profit is equal to the rate of capital accumulation. From this follows the cardinal conclusion noted earlier: the rate of capital accumulation determines the rate of profit. The greater the accumulation, the higher the profit:

one gets as much as one has put in.

Consumption from profit and savings from wages will somewhat alter this correlation. Consumption from profit will cause an increase in demand and a rise in prices, and so raise the rate of profit above the rate of accumulation $\frac{P}{K} > \frac{\Delta K}{K}$. Conversely, savings from wages will reduce demand and lower prices, the rate of profit will drop and will be lower than the rate of accumulation $\frac{P}{K} < \frac{\Delta K}{K}$.

In this way, Robinson (like Kaldor) draws the conclusion that the profit rate is determined by the rate of capital accumulation and the propensity to save. Investments, with the "animal spirit" (the entrepreneur's social psychology) being its motive force, is the key variable of the system. Robinson holds that the rate of capital accumulation cannot be a random one. There is an optimal level of accumulation rate which ensures a national income distribution under which the growth of effective demand goes hand in hand with the growth of production. Too high a rate of accumulation, Robinson believes, makes for an excessively high share of profit in the income and so reduces the share of the working class. In that case, there arises an "inflationary barrier", i.e., inflationary processes are generated because the decline in living standards induces the workers to fight for higher money wages in order to maintain their habitual living standards. Too low a rate of accumulation tends to reduce the rate and share of profit, thereby reducing the incentives for economic growth. The result is a tendency in the economy to stagnation.

However, the tendency to stagnation may also emerge when the profit rate is too high, where that profit is the result of monopoly and not of an excessively high rate of accumulation.

She says: "The limit to the rate of growth of wealth, over the long run, is set not by technical boundaries but by the lethargy which develops when the goad of competition and rising wage rates is blunted.[1] Since she takes the left-wing view of Keynesianism, with its reformist illusions about "progressive capitalism", she assumes that this tendency can be resisted through the trade-union struggle of the working class. "The main defence against the tendency to stagnation comes from pressure by trade unions to raise money-wage rates... If by this means real wages can be made to rise as fast as output per man the root of the trouble is cut, and the economy can accumulate capital and increase total product at the rate appropriate to the pace at which technical improvements are being introduced, just as though competition were still active."[1]

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[1] Joan Robinson, Op. cit., p. 100.

She believes that an increase in wages to the extent of labour productivity growth not only helps to resolve the contradictions arising from capitalist growth under technical progress, but is also its most important stimulus. The society always has a definite spectrum of technological solutions for this or that technical problem, which is determined by the level of labour productivity and the capital-labour ratio: as a rule, the technology ensuring a higher level of labour productivity requires larger capital inputs per unit of labour. It is the level and the dynamic of wages that determine the extent to which the new technology is profitable. The higher the level of wages, the more profitable it is to use less labour-intensive and, consequently, more capital-intensive technology.

She stresses that under competition it is the growth of wages that determines the growth of productivity, and not vice versa. She adds: "It might be possible to have higher wages without higher productivity (provided that there was a lower rate of accumulation), but it would not be possible (under competitive conditions) to have higher productivity without higher wages."[2] She holds that "a low degreee of mechanisation is a symptom of the underlying cause of low real wages, not a cause of low wages in itself."[3]

Her conclusion that growing wages are a condition for realisation of the output and a stimulus to technical progress is a highly progressive one, because it meets the economic interests of the working class in its persevering struggle for better life.

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[1] Ibid., p. 94.

[2] Ibid., p. 130.

[3] Ibid., p. 131.

However, there are at least two erroneous assumptions behind the theoretical substantiation of this conclusion. First, she assumes that the growth of wages can paralyse the contradictions of capitalist reproduction produced by the tendency to monopoly. But the contradiction between production and consumption is organic to the capitalist mode of production. The monopoly practice of raising prices tends, of course, to sharpen this contradiction, and here the author is right. But this contradiction always exists under capitalism, whether under free competition or under monopoly. It is an expression of the basic contradiction of capitalism, that between the social character of production and private form of appropriation. Under capitalism, consumption by the working class is determined not just by the play of market prices, as she assumes, but by the value of labour-power, and this leaves a very narrow framework for the growth of mass consumption under capitalism. Wages, like any price, may deviate from value, rising above or falling below the latter, but they cannot altogether escape from their value basis, without jeopardising profit, the main incentive to capitalist production.

The workers' economic struggle undoubtedly has an important part to play in sagefuarding the working people's living standards from capitalist encroachments. But the importance of this struggle is not to be overrated either. It can help the workers to maintain the living standards they have achieved or even somewhat to improve them, but it cannot eliminate the laws of capitalist production, or the conditions of the exploitation of the working class. At some stages of history, this struggle can help to ease the contradiction between production and consumption in some countries, but it can never do away with this contradiction short of eliminating capitalism itself.

Second, this kind of superficial approach to the contradictions of capitalism is a source of utopian illusions about higher wages having been or being accepted as a deliberate policy by enlightened monopolists aware of the need to "live and let live". Robinson, for instance, believes that it is possible to set up a society in which progressive monopolists and trade unions will co-operate, because both have an equal stake in higher wages: the former, because higher wages create demand and stimulate technical progress, and the latter, because they help to improve living standards. This programme of social alliance is hopelessly out of touch with the realities of the capitalist society, its class contradictions, and the working-class struggle for a fundamental transformation of capitalism.

The capitalist class and the monopolies have never willingly or consciously agreed to limit their profits, for this cuts across the very nature of capitalism, which is kept in motion by surplus-value and profit, its converted form. This is also evident by historical experience, which shows that the growth of wages results from the ceaseless and persevering struggle of the working class, its unity and resolve to stand up for its vital interests.

Robinson, like other proponents of the post-Keynesian theory of distribution, emphasises the kindred nature of their theory with Marx's analysis of reproduction. We have seen that she seeks to deduce all the basic interconnections relating to growth and distribution on the basis of technico-economic interconnections arising from production and exchange between the two departments of social production: production of the means of production and production of the articles of consumption. But her schemes lack the main element of Marx's analysis: the interconnection between the physical and the value structures of the product. Robinson, like her followers, seeks to get rid of the value structure and of value categories altogether. We do not find in her writings the value of labour-power as an inner regulator of wages. It has been replaced by the "inflationary barrier", i.e., a low level of wages resulting from excessive accumulation rates at which the workers are forced to reduce these by fighting for higher money wages. This analysis runs in a different plane from that of Marx's, who starts from the outward form of phenomena and goes on to the nitty-gritty, from prices to value, from wages to the cost of labour-power, from profit to surplus-value and so to the secret of capitalist exploitation.

The real significance of the post-Keynesian theory of distribution is that it is an attempt to tie in the proportions of distribution with the basic proportions of reproduction, something that helps to extend the notion of the macroeconomic mechanism of economic growth. But the socio-economic conclusions which are drawn from it are a far cry from the genuinely scientific interpretation of the nature of the capitalist process of production and distribution, and in practical policies they serve to back up the incomes policy which under capitalism is inevitably aimed against the interests of the working class.

CHAPTER NINE

THE THEORY OF VALUE AND PRICE-FORMATION

1. Discussion of Sraffa's Work

The accent on the problem of distribution proved to be fraught with serious consequences for the post-Keynesians. First, it induced them to deepen their criticism of neoclassical theory, which entailed, as I have shown above, the formulation of new arguments against the theory that fundamentally undermined its logical justification as a profit-formation theory and an income-distribution theory. Second, it induced them to analyse the cardinal problems of value and the basis of price-formation. Having rejected neoclassical theory, the post-Keynesians inevitably faced the problem of *what* was being distributed, i.e., the nature of value, and *how* it was being distributed. These problems which are fundamental to economic theory, inevitably impelled them towards the classical theory of value and distribution. There was good reason why Robert A. Gordon, President of the American Economic Association, in his report to the 88th annual meeting, subjected to comprehensive criticism the state of the orthodox economic science and remarked, in particular, on its amazing inattention to the problems of value and distribution, adding that it was not surprising that many economists of the younger generation sought to find a radical alternative to neoclassical theory along more or less Marxian lines.

These "more or less Marxian" approaches were most pronounced in the discussion of Sraffa's *The Production of Commodities by Means of Commodities*, which was published in 1960 and which fed the copious theoretical researches into the problems of value and price-formation:

Ronald L. Meek said that the importance of Sraffa's book could be considered from several angles: "It can be regarded, if one pleases, simply as an unorthodox theoretical model of a particular type of economy designed to solve the traditional problem of value in a new way ... or ... as a sort of magnificent rehabilitation of the classical approach to certain crucial problems relating to value and distribution."[1]

In place of the neoclassical theory, the post-Keynesians adopted a peculiar version of the Ricardian theory of value, price-formation and distribution which emerged on the basis of that work. Many economists even tried to interpret this theory as a Marxian one or to use it to develop the Marxian theory of value and distribution.

These attempts sparked off acute debates and differences. But they also drew much attention to the Marxian theory of value itself, especially to that aspect of it which relates to the conversion of value into the price of production, to the so-called transformation problem. That is why an analysis of Sraffa's theory in itself and in comparison with the Marxian theory appears to be exceptionally meaningful.

What is the substance of Sraffa's theoretical system? What are the peculiarities of its methodology and what is its true place in the development of the theory of value?

Sraffa analyses the problems of value and price-formation on the basis of schemes of simple and expanded reproduction structured on the principle of natural intersectoral connection of products. The object of his analysis is not value as Marx saw it, but exchange proportions, which he analyses in a spirit of Ricardo's natural (physical) economics.

On the strength of the natural interconnections of the input-output table, a given magnitude of wages and a single rate of profit, he constructs a system of equations which help to obtain the prices of the products (prices of production). Having *k* products, and *k* sectors, wages and profit, he structures k equations on the basis of which prices are determined. The resultant system contains $k+2$ unknowns. Following the choice of the unit of measurement; the number of unknowns is reduced to $k+1$. In order to eliminate another unknown, and make the system more definite and soluble, Sraffa assumes that the distribution of the product between profit and wages is determined exogeneously. Under these conditions, the system is soluble, and can serve as a basis for determining the prices of production of all the k goods (incidentally, that is what was used as the main logic of argument against neoclassical theory: the attempt to determine prices and distribution simultaneously locks into a vicious circle precisely because it is formally impossible to resolve a system in which there are more unknowns than equations. The circle is broken only when the excess of unknowns is eliminated. In this case this is done by recognising that distribution is determined by factors other than prices).

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[1] Ronald L. Meek, "Piero Sraffa's Rehabilitation of Classical Economics", *Science and Society*, Vol. XXV, No. 2, Spring 1961, p. 139.

Sraffa uses the resultant system of equations to analyse how prices will change under the influence of the change in the distribution of the net product (or more precisely, of the so-called "surplus", i.e., the excess of the product over the physical subsistence minimum) between profit and wages. The causes behind these changes and the factors determining the shift in the profit-wages ratio are not considered by Sraffa: this problem remains outside the framework of his analysis.

He shows that the influence of a rise (or drop) in wages on the costs of production of various commodities depends on the proportion in which labour and capital are involved in their creation. The costs of the more labour-intensive commodities will grow to a greater extent than the costs of the less labour-intensive goods. If these commodities, for their part, are included as inputs in the production of other commodities, the change in the prices of production of these other goods will depend on the share of the latter in these costs, etc. As a result, the price of production may rise, or may *relatively* decline as well: there is no straightforward solution. If a given commodity is labour-intensive, but its basic material costs are capital-intensive, the rise in wages will increase the labour costs of the given commodity, but will relatively reduce the costs of material inputs used in the production of the given commodity. Consequently, the price will be a resultant of these opposite forces.

From this it follows that it is impossible to find a commodity whose price of production would remain unchanged and will not depend on the shifts in income distribution. In other words, the price of production cannot serve as a measure for the proportions in the exchange of commodities.

Sraffa sets himself the goal of finding another "measure" of exchange-value which does not depend on changes in distribution and prices, i.e., a "physical" analogue of value.

He formulates the question as follows: is it theoretically possible to construct an industry in which the ratio of net product to the value of material inputs would not change under the influence of changes in distribution and in prices? He goes on to show that such an industry can be set apart in the existing economy. He designates it as the "standard industry". In order to structure this "standard industry" he formulates the concept of "basic commodities", that is, commodities which are, directly or indirectly, included in the production of all the other commodities. The closed system of equations characterising the interconnection between production and consumption of these commodities constitutes the "standard industry". The peculiarities of this "industry" are that both the physical structure of the product and the physical structure of inputs in it are similar. That is why, however prices change, the ratio within it remains unchanged. It is the product unit in the "standard industry" that Sraffa and his followers regard as the "physical" measure of value which does not depend on price changes.

Sraffa's theoretical system attracted much attention, especially among radical economists in the West and became the subject of stormy debates.

Some assert, without any reservations, that Sraffa has developed Marx's theory of value, a view held by some radical US economists (like H. Sherman, who writes about the "Marx-Marshall-Sraffa" theory of value).[1]

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[1] E. K. Hunt and Howard J. Sherman, "Value, Alienation and Distribution", Op. cit., pp. 29-48.

This idea is actively supported by British economists, like John Eatwell of Cambridge, who noted with regret in one of his polemical articles in evaluating Sraffa's work: "Although the critical role of Sraffa's work has been widely acknowledged, the constructive possibilities of the theoretical framework which he has provided, particularly for the development of Marxian theory, have been almost completely ignored."[1] The same view was held by the well-known British Marxist, the late Maurice Dobb, and Ronald Meek. In his last work, Dobb wrote: "The true watershed in critical discussion, dividing the older and newer climates of opinion, was undoubtedly the appearance (in 1960) of Piero Sraffa's slender but classic volume *The Production of Commodities by Means of Commodities*; since not only did this launch something of a school among the younger generation of economists—with a *tendenz* that could be described as 'back to the study of Ricardo and Marx'—but it also provoked a famous, if recondite, discussion of the mid-1960s, commonly referred to as the 'multiple-switching of techniques'".[2] Dobb believes that Sraffa, Robinson and other critics of the marginal productivity theory are heirs to the "Ricardo-Marxian approach to problems of value and of distribution from the side of production".[3]

But there is the opposite view that Sraffa's theoretical exercises have no direct bearing on Marx's theory of value, and that Sraffa developed the Ricardian but in no sense the Marxian approach of the theory of value. Those who think so emphasise the fundamental distinction between the two theories.

This is stressed, in particular, by the US economists A. Medio and Paul M. Sweezy. In a review of Dobb's book, Sweezy says that Marx's theory, while it did elaborate Ricardo's theory, was also its total antithesis, because it amounted to a comprehensive critique of the capitalist mode of production. That is why it is fundamentally wrong to speak of a Ricardo-Marxian tradition which Sraffa's allegedly developed. He goes on: "The very title of the book of Sraffa, who, in Dobb's treatment, is the contemporary embodiment of the tradition ... is in sharp contrast to Marx's approach. Marx was emphatically not concerned with the 'production of commodities by means of commodities'. His subject was the production of commodities by means of human labour—and all that it implied for the civilisation and ultimate fate of the capitalist order."[1]

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[1] John Eatwell, "Controversies in the Theory of Surplus Value: Old and New", *Science and Society*, No. 3, Fall 1974, p. 281.

[2] Maurice Dobb, *Theories of Value and Distribution Since Adam Smith: Ideology and Economic Theory*, Cambridge University Press, Cambridge-London, 1973, p. 248.

[3] Ibid., p. 257.

Let us, therefore, consider in greater detail the relation between Marx's theory of value and the theory which is implicit as the basis of Sraffa's analysis. First, Sraffa's theory of value and Marx's labour theory of value are not the same thing at all. I believe that the fundamental errors in assessing Sraffa's system spring from a misunderstanding, neglect or obscuring of this important distinction. In actual fact, Sraffa takes Ricardo's labour theory of value as his basis. Ricardo believed that exchange proportions were based on the expenditure of labour and determined value by labour time. This, Marx said, was the greatest scientific achievement of classical bourgeois political economy. But Ricardo did not go beyond a purely quantitative approach to the problem: he did not go beyond the concept of exchange-value. Because he failed to bring out the category of abstract labour, he was unable to discern the important distinctions between exchange-value and value as a crystallisation of this socially necessary abstract labour. Marx sharply criticised Ricardo for his indeterminateness and the resulting confusion: "He does not even examine the form of value—the particular form which labour assumes as the substance of value. He only examines the magnitudes of value, the quantities of this abstract, general and, in this form social, labour which engender differences in the *magnitudes of value* of commodities."[2]

Marx's distinction between value and exchange-value was of tremendous importance for an understanding of the further distinctions in the movement of values and prices of production, surplus-value and profit, for an understanding of the substance of the process in which the rates of profit were equalised and value was transformed into the price of production.

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[1] Paul M. Sweezy, Maurice Dobb, "Theories of Value and Distribution Since Adam Smith: Ideology and Economic Theory", *The Journal of Economic Literature*, No. 2, 1974, p. 483.

[2] Karl Marx, "Theories of Surplus-Value", *Capital*, Volume IV, Part II, Progress Publishers, Mocow, 1968, p. 172.

Marx believed that an understanding of the distinction between value and the costs of production was much more important than an analysis of the movement of production costs under the impact of changes in wages, the question which so interested Ricardo, and which the latter confused to such an extent. "How incomparably more important and decisive the understanding of this difference is for the whole theory, than his observations on the variation in *cost-prices* of commodities brought about by the rise or fall of wages."[1]

Marx proved that the very assumption of the existence of a general rate of profit could not be squared with the definition of value by labour-time, without an understanding of the two-fold character of labour, without a distinction between value and exchange-value, between surplus-value and profit. "Instead of *postulating* this *general rate of profit*, Ricardo should rather have examined in how far its *existence* is in fact consistent with the determination of value by labour-time, and he would have found that instead of being consistent with it, *prima facie*, it *contradicts* it, and that its existence would therefore have to be explained through a number of intermediary stages."[2]

Sraffa and his followers, in effect, inherited all the vulnerable aspects of Ricardo's theory of value, which were so strongly criticised by Marx.

Like Ricardo, Sraffa did not recognise the two-fold character of labour embodied in the commodity, and the special character of the labour reflected in value. Sraffa regards value to be no more than a definite measure of economic relations, but not an expression of its essence. He sees value as a purely counting category which can be obtained through a reduction of the prices of production to labour inputs, and nothing more. Value and prices lie in the same plane of economic phenomena. Nor is it accidental that while Marx starts his analysis of price-formation from the value structure of the product, Sraffa proceeds from the physical structure. These distinctions spring from fundamental distinctions in the methodology of analysis.

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[1] Ibid., p. 176.
[2] Ibid., p. 174.

True, Sraffa himself nowhere claims to be involved with Marxism. He mentions the connection between his theory and that of Ricardo, but not with the theory of Marx. And there is good reason for his doing so, because his whole system is structured without the categories of analysis that are essential for Marxism: without value as the embodiment of abstract social labour, without the concept of the value of labour-power, and without surplus-value.

Consequently, from the standpoint of bourgeois economics, this is a definite stride forward, a break with the vulgar subjective theory of value and an advance of the radical tradition. But Sraffa does not rise to the summits of the Marxian theory of value, consciously confining himself to the quantitative aspects of the problem.

Furthermore, Sraffa's followers regard as an important advantage of his "standard industry" doctrine the fact that the latter helps to establish a definite, quantitative relation between the rate of profit and the distribution of the net product, between profit and wages. If p is the rate of profit, w—the share of wages in net product (Y), the connection between p and w is expressed in the formula $p = \frac{Y}{K}(1 - w)$. With $\frac{Y}{K}$ constant (and this ratio is stable and does not depend on price changes only in the "standard industry") the profit rate will be determined exclusively by how the product is distributed between profit and wages. With $\frac{Y}{K}$ constant, the higher w, the lower p, and vice versa, i.e., there is a stable inverse relation.

Those who treat Sraffa's theory as a Marxian one assume this "standard industry" equation provides evidence of the Marxian theory of exploitation, because it can allegedly be used to prove the existence of a direct connection between the rate of profit p and the rate of surplus-value m, of which the expression, they say, is the first part of the above equation.

But Marx's theory of value does not at all assume such a rigid relation between profit and surplus-value. Marx analyses the possible correlation between profit and wages. He starts from a similar formula showing the relations between the rate of profit p' and the rate of surplus-value m':

$p' = m'\frac{V}{K}$, where $\frac{V}{K}$ is the value composition of capital.

To substantiate this theory, he does not at all require a constant value composition, on the contrary, emphasising that the rate of profit is a *form of appearance* of surplus-value which cannot be brought out by simple mathematical computations, but only through *analysis*. "In effect, profit is the form in which surplus-value presents itself to the view, and must initially be stripped by analysis to disclose the latter."[1] Marx considers various cases in which profit and surplus-value can move in different directions because of changes in the composition of capital. As a result, a rising rate of profit may correspond to a declining rate of exploitation, and vice versa. According to Marx, the rate of profit is determined by two main factors: "the rate of surplus-value and the value-composition of capital".[2] Elaborating on this idea, Marx shows that the rate of profit also depends on the rate of turnover of capital, on thrift in the use of constant capital, on changes in the value of constant capital, etc.

Consequently, for its proof the Marxian theory of exploitation does not at all require the establishment of a mathematical equality between the rate of profit and the rate of surplus-value. It rests on a more profound analysis, which shows how—for all the discrepancies between the rate of surplus-value and the rate of profit—the rate of profit is still the form of appearance of the rate of surplus-value.

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[1] Karl Marx, *Capital*, Vol. III, p. 48.
[2] Ibid., p. 69.

2. Sraffa's Theory and the Transformation of Value into the Price of Production

The fundamental distinctions between Marx's theory of value and Sraffa's theory also determine the basic differences in their views of the transformation of value into the price of production.

This transformation problem is central to the Marxian theory of value because it is through this process that the value categories which express the essence of the capitalist mode of production are tied in with the real categories—prices, profit and wages—which appear on the surface of economic life. The law of value and the laws of distribution connected with it operate through the mechanism of price-formation.

Evidence of the existence of such a connection between abstract-theoretical and real categories amounts to evidence that the labour theory of value is correct and relevant. One can well understand why radical economists and Marxists have devoted so much attention, effort and polemical fervour to the discussion and solution of this problem.

What are the specific features of Marx's solution of this problem?

In Marx' system, we believe, the transformation problem has two aspects—the substantive-qualitative aspect, and the quantitative aspect—and is solved through an analysis which is simultaneously historical and logical.

The qualitative content of the transformation problem is, indeed, central to Marx's analysis and constitutes the gist of the problem. Marx analyses the mechanism of capitalist competition, starting from abstract inner categories and moving on to the concrete forms of their appearance, logically demonstrating how value is transformed into the price of production. This is simultaneously also a historical process in which the barter economy is transformed into the capitalist economy.[1] This kind of analysis also helps to bring out the social relations—the relations of exploitation—which lurk behind the simple commodity-price relation. That is the substance of the transformation problem.

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[1] This problem was discussed, among others, by Ronald Meek, on the one hand, and Michio Morishima and George Catephores, on the other. While the latter regard the transformation problem as a purely logical process in the development of one logical category

Marx emphasised that analysing the process of transformation amounts to *more than establishing some quantitative equality, and that it is an analysis of the transformation of essence into the form of its appearance*. "Surplus-value and rate of surplus-value are, relatively, the invisible and unknown essence that wants investigating, while rate of profit and therefore the appearance of surplus-value in the form of profit are revealed on the surface of the phenomenon."[1]

The transformation problem also has a quantitative aspect. It amounts to demonstrating the thesis that the sum total of values is equal to the sum total of the prices of production, while the sum total of surplus-value determines the profit stock which is distributed in accordance with the magnitude of capital among the class of capitalists. Marx showed that this equality is ensured by the fact that the social price of production is regulated by cost-price of the commodities produced with an average organic composition of capital, so that the deviations of values from the prices of production in industries with a higher or lower composition of capital are mutually cancelled out.[2]

Are these two aspects identical, or at any rate, equivalent? They are obviously not. The first indicates the transition of essence into phenomenon, and shows the connection between essence and phenomenon; one could say that in the former the relation is multi-dimensional, whereas one-dimensional space is assumed in the latter, when the connection is established on one and the same level. Far from being identical, these two aspects of the transformation problem are not even equivalent in substance.

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into another (see their articles in *The Economic Journal*, June 1975 and June 1976), Meek takes a different approach, and regards it as a unity of the historical and logical (see: Ronald L. Meek, "Is There an Historical Transformation Problem?", *The Economic Journal*, June 1976).

[1] Karl Marx, *Capital*, Vol. III, p. 43.

[2] Ibid., pp. 154-56.

Whereas the former aspect indicates the essence of the phenomenon, the latter is rather designed to illustrate this essence.[1]

Nevertheless, all the discussions in bourgeois literature of the transformation problem have concentrated on its *quantitative* aspect.

The first to seize upon this aspect of the problem were critics of Marx who ignored and obscured its qualitative content.

The critical offensive was started a century ago by Eugen Böhm-Bawerk, who declared that Marx had failed to solve the transformation problem, an idea which has since then prevailed in the assessments of Marx's theory of value by bourgeois economists. One of the latest to make a "contribution" to backing up and elaborating this idea was Paul Samuelson, who presented an extensive paper on the subject.[2] Samuelson continues to insist that Marx had developed two different theories—a theory of value and a theory of price—which cannot be reconciled with each other. He claims that Marx was unable to prove that for the society as a whole the sum total of the produced values was equal to the sum total of prices. Marx was allegedly inconsistent, because he had kept the same constant capitals: in his price calculations as well as in his value calculations, whereas logic required that in the former instance the constant capital had to be calculated also on the basis of the prices of production.[1]

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[1] Incidentally, this essential feature of Marx's theory was remarked upon by Maurice Dobb, who wrote: "While he was concerned no less than was Ricardo to exhibit the quantitative relationship between conditions of production and actual exchange-values or prices (if only because otherwise a link would have been lacking between the analysis in value terms in Vol. I and actual market phenomena), he was concerned at least as much to demonstrate the qualitative, or relational, aspect of things, especially as regards income-distribution... He called it revealing the 'hidden essence' and 'inner form' lying beneath the superficial 'outward disguises' or 'market appearance' of things. This is what some have meant by saying that his theory has to be viewed as 'economic sociology' and not only as economic analysis in the narrower and more modern sense of the term" (Maurice Dobb, *Theories of Value and Distribution...*, Op. cit., p. 149).

[2] Paul Samuelson, "the Understanding of the Marxian Notion of Exploitation: A Summary of the So-called Transformation Problem Between Marxian Values and Competitive Prices" (*The Journal of Economic Literature*, Vol. XI, No. 2, June, 1971).

With this thesis as a starting point, Marx's critics assert that the deviations of value from the prices of production are not regulated by the organic composition of capital, because the latter itself depends on the changes in the prices of production. Here they assert (and this assertion is not illogical) that any change in the relation between profit and wages will have a different influence on the individual process of production of commodities turned out in industries with different organic composition of capital. This will ultimately also change the organic composition itself. That is why it is allegedly impossible to say anything definite about how prices will deviate from value and what will regulate these deviations.

The starting point for this criticism is the consideration of the question of how changes in wages influence the prices of production and the relation between the prices of production and values. Let us note that Marx devotes a small chapter (Chapter XI in Volume III in his *Capital*) to this matter. Marx's attitude to the problem, the importance which he attaches to it is characteristic: "This is but a very secondary question compared with the other important points analysed in this part" (meaning the transformation of profit into average profit—*I.O.*) [2] Considering the influence of changes in wages on the prices of production, Marx shows that the latter have an influence on relative prices but do not change the position of the industry with average organic composition of capital as the regulating one, and that is what ensures the equality of the sum of values and the sum of prices of production. This will be seen from a simple example.

Marx writes: "Since the price of production of the commodities of the average capital remained the same, equal to the value of the product, the sum of the prices of production of the products of all capitals remained the same as well, and equal to the sum total of the values produced by the aggregate capital. The increase on one side and the decrease on the other balance for the aggregate capital on the level of the average social capital."[1]

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[1] Samuelson writes: "Without exception, critics and defenders alike, have recognised that Marx was not consistent in all this. For he mistakenly kept the same constant capitals... in his price calculation as well as in his value calculations" (ibid., p. 414).

[2] Karl Marx, *Capital*, Vol. III, p. 204.

But assuming that the change in prices effects the constant capital in the industry which regulates price-formation, the picture becomes less obvious. That was also noted by Marx: "Should the rise or fall in wages be due to a change in the value of the necessities of life, a modification of the foregoing findings can take place only to the extent that commodities, whose change of price raises or lowers the variable capital, also go into the constant capital as constituent elements and therefore affect more than just the wages alone. But if they affect only wages, the above analysis contains all that needs to be said."[2]

However, as I have already shown, Marx did not believe the question of the mathematical equality of value and prices of production to be all that essential for his theory, and so left it open. The quantitative aspect of the transformation problem may possibly be solved on the basis of more elaborate mathematical methods. But this quantitative aspect has no definitive role in Marx's theory of value. As I have repeatedly stressed, it is a particular matter. Sraffa's line of reasoning is of some positive importance only because the problem has been so inflated by bourgeois economists and has been made so much of in anti-Marxism. But it would be an extreme exaggeration to regard it as a further elaboration of this theory, as a solution of the transformation problem in the truly Marxian comprehension of the process.

What has been said suggests the conclusion that Sraffa's system may be regarded as a particular case in the solution of the quantitative aspect of the transformation problem, but his analysis cannot be in any sense identified with the much broader qualitative approach to the transformation problem which is characteristic of Marx. Nor is that accidental, because, as I have shown, Sraffa takes the Ricardian approach. He shuns Marx's view of value as an embodiment of social relations. He also eschews the view of transformation as a process in which the inner categories and laws of capitalist production are converted—through the corresponding economic mechanism—into the everyday forms of their appearance.

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[1] Ibid., pp. 201-02.
[2] Ibid., pp. 203-04.

The fundamental distinction between Marx's theory of value and the mechanism underlying the transformation of value into the price of production, and Sraffa's theory is most manifest in a comparison of distribution categories. Let us emphasise that Sraffa's system does not include any distribution theory at all (that is why the statements by some economists about Sraffa's theory providing a starting point for a new distribution theory are, I believe, groundless). Like Ricardo before him, he assumes a similar rate of profit as something exogenously given, and its level is also determined by forces outside the framework of his system of technico-economic ties.

The same applies to wages. Because he does not recognise the category of the value of labour-power, Sraffa introduces a wage limit, i.e., a physically necessary minimum of means of subsistence, so that everything over and above it is, in his opinion, the result of a sharing out of a "surplus" between profit and wages. But the objective basis and uniformities for this sharing out are simply not stated, and this is, incidentally, emphasised by John Eatwell, an expert and advocate of Sraffa's theory. In one of his articles, he admits that the objective basis for determining the level of wages and distribution of net income is absent from Sraffa's scheme: "The apportionment of output is therefore an open element in the analysis of price-formation, and the system may only be closed by the addition of a new theory to determine the real wage or the rate of profit. Sraffa leaves the issue open. He develops the analysis in terms of the possible wage-profit-rate configurations for the given system of production and the given composition and scale of output."[1]

Let us note that some of those taking part in the discussion of Sraffa's theory of value in the West have also noted the fundamental distinction between Marx's view of the transformation problem and Sraffa's.

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[1] *The Journal of Economic Literature*, Vol. XV, No. 1, March 1974, p. 64.

Paul Mattick rejects the mathematical methods used to prove the incompatibility of values and prices, and says that they are not of essential importance for solving the transformation problem. That is quite true.

Marx's purpose was to discover the laws governing the movement of capitalist production, and that is why he had to move from market phenomena to an analysis of the relations of production. Mattick says: "For Marx, value and price relations are not 'economic' relations in the sense of bourgeois economic theory, but *social class* relations which appear as 'economic' relations under the conditions of capitalist commodity production."[1]

The US economist William J. Baumol wrote: "One must also reject the assertion that Marx thought prices had to be deduced from values via his transformation calculation... Prices and values are, in short, not the same thing. Values are not approximations to prices nor a necessary step in their calculation. Rather, one is a surface manifestation, while the latter is intended to reveal an underlying reality... The point of the value theory may then be summed up as follows: goods are indeed produced by labour and natural resources together. But the relevant social source of production is labour... The competitive process, that appears to show that land is the source of rent and capital is the source of profits and interest, is merely a distributive phenomenon and conceals the fact that labour is the only socially relevant source of output. This is the significance of the value theory and the transformation analysis to Marx."[2]

The discussion of the transformation problem, the impossibility of establishing an exact equivalence of prices of production and values and, ultimately, the failure to understand the substance of Marx's transformation theory, all of this has made for much confusion in the views of radical economists of Marx's theory of value as a whole. Without an understanding of the substance of Marx's theory, some of them decided to put paid to the transformation problem as such, by throwing the baby out with the bathwater, that is, by discarding Marx's theory of value itself. Noteworthy in this context is a book by the young British economist Jan Steedman.[1]

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[1] Paul Mattick, "Samuelson's 'Transformation' of Marxism into Bourgeois Economics", *Science and Society*, No. 3, Fall 1972, p. 268.

[2] Baumol-Samuelson-Morishima, "On Marx, the Transformation Problem and Opacity", *The Journal of Economic Literature*, March 1974, pp. 55, 59.

He sharply criticised all those who had generally started discussions of the transformation problem. Taking the transformation problem to be a mere equating of the sum of values and the sum of prices, of surplus-value and profit, he asserted that that problem was not existent at all. It was a chimera, he declared. He claimed that there was altogether no need for a theory of value in analysing the formation of prices of production, average rate of profit and social division of labour in economics.

He strove to prove that rate of profit, prices of production and social distribution of labour-power could all be determined without any reference to value categories. "Under simple, reasonable assumptions the physical conditions of production and real wages suffice to determine the rate of profit, all prices of production, which methods of production are used, at what age machines are scrapped, the social allocation of labour-power, and so on. No value magnitude is of the slightest relevance to that determination. It will be concluded, therefore, that Marx's value magnitude reasoning should be abandoned by those working to develop the materialist account of the capitalist economy."[2]

Steedman's work is based on thorough mathematical computations. His equations show that if costs—like the product—are measured in prices of production, the average rate of profit will turn out to be different than it is when it is taken as the quotient of the division of surplus-value by the costs of constant and variable capital. That is the basis for the following conclusion: "There is not, in any significant sense, any 'transformation problem' to be solved. Since value magnitudes are irrelevant to the proximate determination of the profit rate and of production prices, no issue of the relation between values and prices, or of that between profit and surplus-value, ever arises."[1]

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[1] Jan Steedman, *Marx after Sraffa*, Lowe and Brydon Printers Ltd., Thetford, Norfolk, 1977, p. 27.

[2] Jan Steedman, Op. cit., p. 27.

The only connection between them is that positive surplus-value is the condition of the existence of profit.

In my view, however, Steedman's argument does not refute Marx's theory, but the vulgarised notion of value and the transformation of value into the price of production which has been accepted by many Western Marxists, as well as Steedman himself.

It is impossible to establish any straightforward arithmetical connection between value and price of production. These categories lie in different places and in different dimensions. Value is an abstract category and requires a reduction of the whole diversity of concrete types of labour of varying degrees of complexity, different quality, arduousness, attractiveness or non-attractiveness, etc.—to one, homogeneous labour, which no mathematical exercise can help to do. This is done only by competition, and this reduction is given expression only in the processes of price-formation and income distribution. That is why there can be no formal objections to Steedman's equations. They are correct. But one cannot accept his categorical conclusions against Marx's theory of value. The only thing Steedman proves is that one and the same product, measured in labour costs (incidentally, in *unreduced* labour) and in the prices of production yields different indicators. But this does nothing to invalidate the cardinal importance of the theory of value for analysing the nature of capitalism and the internal uniformities governing its development as a socio-economic system in its entirety.[2]

The vulgar treatment of the transformation problem makes Steedman's own position contradictory. While, at first sight, rejecting the theory of value but maintaining, as he claims, the materialist explanation of capitalism, he is inevitably returned to that theory. This is paradoxical, but it is a fact. While ascribing to Marx a one-sided, vulgarised treatment of the transformation problem and criticising this treatment (and not Marx's at all!), Steedman effectively advocates Marx's theory, without suspecting that he is doing so.

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[1] Ibid., p. 66.

[2] It is worthwhile to note the objections to Steedman's book, like that from Ben Fine and Laurence Harris, the authors of *Rereading Capital* (Macmillan and Co. Ltd, London, 1979). In a review of the book, Alex Callinicos writes: "They argue, in my view rightly, that the labour theory of value must be understood less as a theory of relative price than as the indispensable starting point for the analysis of the laws of motion of capitalism" (Alex Callinicos, "Marxism & the Academics", *New Statesman*, December 14, 1979, p. 945).

He claims that his solution of the problem (that is, refusal to establish the equivalence of profit and surplus-value, values and prices of production) is "consistent" (let us not dispute the term); he is quite right when he says: "People are afraid of these coherent solutions because they fear that if total profit can diverge from total surplus-value then the way is open to theories attributing the existence of profits to circulation processes, 'contributions' made by capitalists, etc. *This fear is completely unjustified.* It is simple, within these alternative solutions, to show how profits will be positive *if and only if* there is surplus-value, i.e., capitalist exploitation. That is all that is at issue; any question of total profit and total surplus-value being equal in magnitude is trivial. The alternative, and coherent solutions do not undermine the idea that exploitation is the source of profit; on the contrary, they provide a simple means of demonstrating how the existence of surplus-value is a necessary and sufficient condition for the existence of profit. Indeed the alternative solutions bring to light the fact that the determinants of the profit rate are precisely the determinants of the rate of surplus-value, which Marx analysed so intensively in *Capital*, Vol. I, namely daily wage, the length of the working day and the conditions of wage commodities ...Thus this approaches the mesh analysis of rate of surplus-value and rate of profit more closely together than Marx was able to do."[1]

What an odd thing to say! Having returned to the positions of Marx's theory of value, Steedman assures us that he has solved the problem better and more consistenly than Marx himself did. There is here clearly something wrong with the logic of common sense. But the logic of scientific analysis speaks for itself: it is impossible to give a materialist explanation of capitalist production without Marx's theory of value, exploitation and surplus-value, and without a scientifically elaborated transformation theory, which meshes these categories of analysis with the actual categories of capitalist reproduction.

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[1] Ibid., pp. 34-35.

The confrontation of standpoints concerning Sraffa's work could be continued because it sparked off a major discussion, which is itself of much interest. Let us note merely that the discussion continues and its very origination is highly significant. Much importance attaches to the contribution made by Robinson and Sraffa to the criticism of the neoclassical theory of value and distribution, which once used to be the main antagonist of the Marxist theory of value and exploitation.

Sraffa revived the Ricardian attitude to the theory of value and returned to the labour theory of value but—and this is of primary importance—he failed to go all the way to its Marxian comprehension. His approach to elaborating the quantitative aspects of formation and changes in the prices of production and also his mathematical variant for the solution of the quantitative aspects of the transformation problem are interesting.

However, we do not share the raptures of Sraffa's followers, who saw his work as "a new word" in the development of Marxism. Analysis shows that Sraffa veers away from the scientific, Marxist interpretation of the crucial categories of the political economy of capitalism—value, surplus-value, the value of labour-power, etc.—without which it is impossible to analyse the laws governing the production and distribution of value and underlying all the categories and trends in the development of the actually existing capitalist economy.

PART FOUR

THE CRISIS OF KEYNESIANISM AND ECONOMIC POLICY TODAY

CHAPTER TEN

THE GOVERNMENT AND ECONOMIC GROWTH

1. The Scale of Government Intervention

Let us look at the theoretical discussions which have had most influence on the formulation of official conceptions for regulating the US economy both in the "tranquil" 1960s, and in the turbulent 1970s, which were marked by a crisis of Keynesian concepts of the government role in the economic development and by a profound differentiation of views on the scale and forms of its intervention in economic affairs.

The 1970s saw a substantial shift in notions about the place of the government in economic growth and the scale and forms of its intervention in economic affairs. There was a resolute review of the goals and factors of economic growth and the strategy of government regulation of reproduction as a whole. But in order to understand why this occurred, there is a need to show the scale attained by direct government intervention in the processes of reproduction (since it is direct government intervention and the scale of its growth that came to be criticised), on the one hand, and how the conditions of reproduction had changed, on the other.

The accepted view is that government intervention in reproduction processes in the United States—if one excludes the measures connected with the policy of managing effective demand (fiscal and monetary policies)—is on a much smaller scale than it is in other developed capitalist countries, especially the West European countries, where some major industries have been nationalised. Still, the scale of this intervention in some spheres of the economy, above all, the vital sectors of the production and non-production infrastructure, is sufficiently great. This intervention has been and continues to be the material basis on which the government relies in exerting an influence on long-term economic development.

A synthetic indicator of the growth of government intervention in the economy is provided by the share of the GNP redistributed and expended by all the units of the government system through the Federal budget, and the budgets of the states and local authorities. In the 1960s and early 1970s, this share continued steadily to grow. It went up from 30 per cent in 1960 to 36 per cent in 1975.[1] The share of Federal spending went up from 18.5 per cent to 22.5 per cent.[2] Let us consider the main forms of government spending and their place and role in the processes of reproduction.

Of tremendous importance are government investments, above all on the level of the countries and states, in building up and developing the production and non-production infrastructure. These investments are used for highway construction, the development of water and air transport, the erection of electric-power plants and other public utilities, preparation of territory for industrial and public utilities construction, the building of schools, hospitals, and so on.

Table 5 shows that government nondefence investments have tended to grow much faster than private investments, so that the former went up from 22.2 per cent of the latter in 1960 to 26.1 per cent in 1975, with the bulk (in 1975, $ 43.3 billion out of $ 48 billion) being effected by the states and local authorities.

The next table gives an idea of the structure of governmental expenditures (with the exception of defence and space expenditures). Let us recall that 85 per cent of these expenditures were made by the states and local authorities.

The 1960s saw a sharp growth of human capital.

Government policy in the sphere of the development of human capital came to be regarded not only as participa-

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[1] *Statistical Abstract of the United States, 1977*, Department of Commerce, p. 247.

[2] Ibid., p. 278.

Table 5

Percentage of Private and Government Investment in Fixed Assets

	1960	*1970*	*1975*
1. Gross private capital investments, $ bln	74.8	140.8	183.7
2. Government nondefence investments, $ bln	16.6	33.2	48.0
2 as a percentage to 1	22.2	23.6	26.1

Sources: *Statistical Abstract of the United States, 1962*, p. 462; idem., *1977*, pp. 282, 428.

tion in developing the most important factor promoting the growth of the economic potential. This policy is claimed to be of a much greater importance in attaining the social goals of economic growth: reducing the level of unemployment, extending "economic equality", "justice", etc.

Table 6

Structure of Governmental Nondefence and Nonspace Expenditures

	1960 *$ mln*	%	*1971* *$ mln*	%	*1975* *$ mln*	%
All expenditures	17,159	100.0	37,670	100.0	51,925	100.0
Highways, air transportation, water transportation and terminals	7,370	43.0	13.651	36.2	15.601	30.2
Sewerage, local utilities	2,174	12.7	4,400	11.7	8,415	16.2
Education	3,698	21.6	8,124	22.1	9,863	19.0
Health and hospitals	476	2.8	1,370	3.6	2,092	4.0
Natural Resources	1,182	11.3	3,087	8.1	4,529	8.7

Sources: *Statistical Abstract of the United States, 1962*, p. 420; idem., *1973*, p. 415; idem., *1977*, p. 282.

The budgets of states and local authorities are the main sources from which education is financed: in 1960, they accounted for 30.6 per cent, in 1970–35.6 per cent, and in 1975–33.1 per cent.[1]

There was a sharp increase in Federal spending on manpower training: 0.2 per cent in 1950, 1.1 per cent in 1960, 4 per cent in 1970, and 5.1 per cent in 1977.[2]

Stimulation of scientific and technical progress is a main line of government intervention in economic growth, and it is effected above all through an accelerated growth of government outlays on R and D, especially basic research. The government also undertakes the industrial application of new discoveries and inventions which are highly capital-intensive and involve a large degree of risk from the standpoint of recoupment of outlays and of profitability. It promotes the most rapid application of inventions in private sector through its information service. Finally, by using the various instruments of indirect regulation—fiscal policy, monetary policy and especially depreciation policy—the government stimulates the renewal of capital in the private sector.

Government investment in R and D has grown to tremendous proportions. In the 1950s, Federal spending accounted for roughly 50 per cent of the total, and by the end of the 1960s, the figure was up to about 60 per cent. After that, there was a slowdown in the growth of government R and D spending, and by 1976-1977, the figure came to just 58 per cent.[3] The growth of government spending on science helps to advance basic research in which private business has no direct stake. By the end of the 1970s, the government financed 68-70 per cent of basic research.[4]

All of this shows that the government has been exerting a growing influence on the development of science, an influence which has brought out most sharply the contradictions of present-day state-monopoly capitalism. The bulk of the Federal funds has gone primarily into research variously related with the arms drive. In the 1960s, government outlays on space exploration and atomic energy grew at an especially fast pace. In the course of the 1960s, the Joint Commission on Atomic Energy invariably had 8-9 per cent of Federal outlays on research, while the share of the National Aeronautics and Space Administration (NASA) shot up from 5 per cent to 33 per cent in 1966, and then dropped slightly owing to cutbacks in spending in this area. In 1970, it stood at 24.5 per cent of all Federal outlays on R and D.

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[1] *Statistical Abstract of the United States, 1977*, p. 286.
[2] Ibid., p. 250.
[3] *Statistical Abstract of the United States, 1977*, p. 612.
[4] Ibid.

The stimulation of Federal research and its concentration on the crucial lines of technical progress, the provision of information and accelerated application of scientific achievements in production are coming to be of tremendous importance. As never before in the past, science is now expected to produce fundamentally new production techniques to help solve energy problem (alternative types of energy and energy's more rational use in production processes), problems in transportation and communications, preservation and improvement of the environment (cheaper purification techniques, recycling in production, etc.).

Substantial changes have been taking place in the structure of government R and D spending (Table 7).

Table 7

Federal Spending of R and D (Fiscal Years)

	1970		*1975*		*1978*	
	mln $	%	*mln $*	%	*mln $*	%
Total	15.340	100.0	19.013	100	26.317	100.0
Defence	7.976	52.0	9.621	50.6	12.907	49.0
Space	3.510	22.8	2.511	13.2	3.140	12.0
Health	1.126	7.3	2.177	11.4	2.683	10.0
Energy	317	2.0	1.110	6.0	2.798	10.1
Environment	354	2.3	897	4.7	1.098	4.2
Others		13.6		14.1		14.7

Sources: *Statistical Abstract of the United States, 1971*, p. 510; idem., *1977*, p. 613.

2. The Results of the 1960s: the Shaping of an Economic Growth Policy

In the 1960s, Keynesianism undoubtedly exerted the crucial influence on the working out of a conception of economic regulation. This was a period of assertion of the Keynesian idea that the contradictions of capitalist reproduction could be resolved by means of government economic policy. There was a steady growth in the scale of government regulation In that period, economic theory gained universal acceptance and its scientific authority provided the blessings for the practice of government intervention in the economy. There was a multi-faceted process of "etatisation of economic science"[1], which was manifested in the mass recruitment of academic economists for work in governmental and semi-governmental institutions providing economic expertise, and in the emergence of various "brain trusts" and "think tanks", the centres at which theoretical ideas were translated into practical recommendations for the government.

Walter W. Heller, Chairman of the Council of Economic Advisers under the Kennedy Administration,wrote later that behind contemporary economic policy lay three decades of progress in economic science, highlighted by Keynes's formulation of the problem of determinants for the level of employment and national income; Alvin Hansen's further development of Keynesian analysis; Simon Kuznets's concepts of national income and gross national product, which paved the way for the structuring of macroeconomic statistical indicators of economic development; Paul Samuelson's "neoclassical synthesis" of the problems of full employment and effective allocation of resources; and the development of the quantitative aspects of economic analysis with the use of computers.[2]

Economic growth policy, i.e., a policy of maintaining high and stable growth rates, became the most important line of economic policy in the 1960s. By means of such a policy, the government hoped to resolve not only the internal contradictions in the development of the capitalist society, but also to assure it of a steady preponderance in the historical competition with socialism.

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[1] Various aspects of this process were analysed in detail in *Bourgeois Economic Theories and the Economic Policy of Imperialist Countries*, a book edited by A. G. Mileikovsky (Moscow, 1971, in Russian).

[2] See: Walter Heller, *New Dimensions of Political Economy*, Harvard, 1966, p. 4.

The heated debates of the 1960s about what ultimately determined economic growth rate in a set of concrete conditions—the conditions of realisation, i.e., demand, or the conditions of production, i.e., the supply of economic resources—were of tremendous importance in shaping the concept of economic growth regulation. The Keynesians held that it was either a shortage or a surplus of demand that tended to upset the dynamic equilibrium both in the short and in the long term. By contrast, the neoclassicists laid emphasis, both in the short and the long term, on factors relating to the production and supply of resources: the costs-prices ratio, optimal combination of resources, efficiency of production, i.e., all the factors which determine the economic potential.

The differences between the two schools were most sharply focussed on their assessments of the causes behind the slowdown of the US economic growth rate in the latter half of the 1950s. The Keynesians' view was most fully expressed in the writings of Hansen, who used the term "semi-stagnation" to designate the state of the US economy in the latter half of the 1950s.

In his view, the slower growth was caused by a sharp weakening of the internal "spontaneous" forces which determine the growth of demand, both production demand (private investment) and non-production demand, especially for consumer durables. The weakening of these factors was to some extent compensated by the increase in government spending, but the latter proved to be far from adequate.

Hansen's Keynesian approach was clearly expressed in the fact that he saw the conditions for the realisation of savings as constituting the main problem. While the whole institutional system induced a growth of savings, investment opportunities were being extended much too slowly. The US economy is "a high-saving economy", he wrote. "It generates an enormous volume of saving at high levels of employment—depreciation allowances, corporate retained earnings, pension funds, life and health insurance reserves, savings deposits, mutual funds, and large latent federal surpluses. No society can maintain its current achieved level of income unless all these savings funds can find borrowers—business borrowers, consumer borrowers, and government borrowers. If borrowers cannot be found, the potential savings go to waste and income declines. More than that, in a growing society, borrowing must exceed the funds offered by lenders; investment must exceed saving, or the economy cannot grow. To buy the larger product that will be produced 'tomorrow' requires the spending not merely of the whole of today's income (including finding sufficient borrowers to take up all current savings). Credit expansion and new debt obligations also are needed to supplement current income sufficiently to take up tomorrow's enlarged output."[1] Like other Keynesians, Hansen believed that demand was the area in which the solution for the problem of accelerating the growth of a "flagging" economy lay. The proponents of the Keynesian approach believed that government spending was of the utmost importance in solving the problem of a "stagnating economy". The main purpose of government spending was to increase effective demand both on the side of the government and through the creation of favourable conditions for private investment. They pinned especially great hopes on increased outlays on housing construction and urban renewal.

The Keynesians held that in order to create favourable conditions for the growth of private investments, to stimulate technical progress and create new investment opportunities, the government should increase its spending on research and on the development of human capital. In addition, much importance was attached to the growth of municipal spending on infrastructure sites for industrial enterprises. The Keynesians believed that growing government spending was even more important than a lowering of taxes. Hansen observed: "From the standpoint of industrial competition, however, we may be moving into a new era. Industry may increasingly be more interested in high standards of public services, in high standards of education, etc., than in low tax rates. One observes a growing number of advertisements by state development offices in which it is not the low tax rate that is played up; rather it is the alleged high quality of public education, municipal services, housing, hospital facilities, etc."[1]

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[1] Alvin H. Hansen, *Business Cycles and National Income*, pp. 641-42.

Thus, the Keynesians saw government spending as the main instrument of economic policy.

In that period, the neoclassicists took a diametrically opposite stand, and it was formulated by Arthur F. Burns, one of the most prominent keepers of the neoclassical tradition in economics in the United States. He branded the Keynesian view as a "new stagnation theory".[2] The neoclassicists refused to admit that the private enterprise system had any serious defects and saw capitalist competition as the most important motive force of economic development, which is why they set before the government the limited task of maintaining a balance between the growth of profit and wages. What is more, they claimed that the Keynesian programme for increased government spending involving a further growth of profit taxes was an attack on the "freedom of the individual", meaning an infringement of the interests of the monopolies.[3] They were most indignant over the idea expressed by left-Keynesian economists that the main obstacle to economic growth consisted in the inadequate purchasing power of the population.

They claimed that higher growth rate could be stimulated by higher profit, as a result of curbs or even a complete freeze on the growth of wages (which they held to be the cause of inflation), a lowering of taxes on corporate profits and income tax on persons in the high-income bracket, a reduction in government outlays on public needs, and so on.

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[1] Ibid., p. 639.

[2] Arthur F. Burns, "Examining the New Stagnation Theory", In: *Business Fluctuations, Growth and Economic Stabilisation*, Random House, New York, 1966, pp. 491-95.

[3] The sharpest criticism of Keynesian theory came from the economists of the Chicago School. See, for instance, Milton Friedman, *Essays in Positive Economics*, Chicago, 1953; idem. *Capitalism and Freedom*, Chicago, 1963.

The neoclassicists' most common argument against the Keynesian programme for greater government spending was that the latter failed to go to the root of the basic problem of growth, namely, the problem of efficiency. Thus, Burns fiercely attacked the Keynesian economic growth programme as a whole, especially those of its planks which were related to an expansion of outlays on public needs. He wrote: "I would hold that improved medical care of the aged, however desirable it may be in the interests of human welfare, will do little or nothing to improve economic efficiency or to accelerate long-term growth, and that it is entirely misleading to favour better medical care of the aged, as is now being done, on the ground that it will also promote long-term growth... However, the problem of accelerating long-term economic growth is excessively simplified when we suppose that it will be resolved merely by greater investment outlays."[1] Burns held that the gist of the problem was to enhance the marginal efficiency of investment, and not its volume.

The discussions of the 1960s also had an important part to play in determining the main strategic factors of potential economic growth, towards which economic policy had to be oriented.

The Keynesians had always held investment to be the crucial parameter of regulation. As we have seen, they regarded investment—production and non-production, private and especially government—as the basis for national income growth over the short term, and consequently, as the main factor of anti-recession policy. In their long-term growth models, investment was the key parameter for increasing the economic potential.

The neoclassical analysis of economic growth factors on the basis of the Cobb-Douglas type of production functions suggested the conclusion that in the contemporary capitalist economy the crucial role for boosting growth did not belong so much to investment as to technical progress, or greater factor-productivity stemming from technical innovation, a higher level of education and skills, improved production engineering and management, etc. The main strategic growth factor was not considered to be investment in fixed capital, but factors that were frequently illusive quantitatively but that promoted growth and efficiency, which meant above all investment in human capital.

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[1] A. Burns, Op. cit., pp. 499, 500.

Thus, economic growth policy was shaped on the basis of a synthesis of Keynesian and neoclassical notions concerning the factors which determined economic development over the short and long term. Bourgeois economists and politicians tried to tie in the business cycle policy based on expenditure adjustment with a capacity expansion based on the stimulation of investment and its greater efficiency.

For all practical purposes, this tying in boiled down to the use of Keynesian methods for expenditure adjustment in the conditions of economic recession or sluggish development and utmost inducement of growth of the production capacity in a situation in which all other levers have already been employed.[1]

The elaboration of the concept and policy of economic growth implied a substantially broader view of the role of the government in regulating the processes of capitalist production. Economic growth policy signified that from a purely short-outlook policy, based on a regulation of effective demand, the government switched to a policy of long-term influence on the economic potential, on the potential rate of growth, in an effort to have this policy also cover counter-cyclical regulation. The economic growth policy envisaged, as its regulation parameters, influence both on extensive growth factors, i.e., supply of labour-power and capital, and on intensive factors accelerating technical progress and labour productivity growth. Nowadays, this strand of the growth policy was made especially important by the tremendous significance of intensive growth factors.

This reorientation was reflected by Walter W. Heller, who in 1966 wrote: "Gone is the countercyclical syndrome of the 1950s. Policy now centers on gap closing and growth, on realising and enlarging the economy's non-inflationary potential."[1]

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[1] Analysing the theoretical principles of Kennedy's economic policy, the US economist E. Ray Canterbury emphasised: "Kennedy leaned toward Keynes during recession and slow growth and toward classical economics during periods of expected inflation and balance-of-payments crises" (E. Ray Canterbury, *Economics on a New Frontier,* Wadsworth Publishing Co., Belmont, 1968, p. 26).

In this way, potential rate came to the fore in the economic growth regulation concept to become a global reference point in the switch of economic policy lines. It was assumed that in the event of a gap between actual and potential growth rates, it is this gap that should become the object of business cycle policy. But if the task was to increase growth rate over and above the potential rate, there was a need for another policy, a policy of economic growth in the narrow sense of the word affecting the elements of the economic system which determine its production potential. This standpoint was clearly formulated by Edward F. Denison, who wrote: "It is absolutely essential to distinguish between 1) the growth of the nation's 'potential' production, its ability or capacity to produce marketable goods and services, and 2) changes in the ratio of actual production to 'potential' production. The former depends on changes in the quantity and quality of available labour and capital, the advance of knowledge, and similar factors, while the latter is governed mainly by the relationship between aggregate demand and potential production. Changes in the national product between any two dates are, of course, governed by both. But the causes of change, the interpretation to be placed upon them, the policy measures that must be taken to affect them, and the implications of such policies for future growth all are entirely different."[2]

The long-term tasks of US economic regulation were first determined and formulated as special programmes for economic growth in the early 1960s, with the inauguration of the Kennedy Administration, when leading US economists who advocated active government economic control became the President's advisers. From 1961, the Council of Economic Advisers began regularly to compute the potential growth rate and the gap between it and actual growth rate. Together with the unemployment rate and the volume of idle capacity, this indicator has been accepted as the basic criterion of the level of economic activity in the country and a guidepost for economic policy.

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[1] Walter W. Heller, *New Dimensions of Political Economy*, Harvard University Press, Cambridge, Mass., 1966, p. VII.

[2] Edward F. Denison, *The Sources of Economic Growth in the United States and the Alternatives Before Us*, Committee for Economic Development, New York, 1962, pp. 3-4.

In 1961, John F. Kennedy announced, as the primary and long-term aim of US national economic policy, the need to increase long-term growth rate in the US economy to 4.5 per cent a year.

The Kennedy Administration's growth programme included measures aimed to overcome the gap between actual output growth and potential growth, i.e., the traditional stabilisation measures, as also measures designed to expand the economic potential (considering that the potential growth rate computed by the Council of Economic Advisers for the 1960s had come to 3.75 per cent). This policy was formulated and started at a slow-growth time in the presence of vast labour reserves. This policy brought to the fore the problem of increasing effective demand.

Three strategic lines in the government's long-term influence on potential economic growth were simultaneously mapped out: 1) the stimulation of civilian technology; 2) the support of education; and 3) the development of manpower. The economic report of the President said that, together with tax revision, these three lines marked the beginning of a more conscious and active policy for economic growth[1].

Fiscal policy had the crucial part in effecting both aspects of growth policy: expansion of effective demand and increase of the economic potential. Growing government spending was not to be oriented towards actual revenues, but towards revenues "at full employment". The new concept legalised the continued growth of budget deficits for the purpose of increasing government spending.

Walter W. Heller, Chairman of the Council of Economic

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[1] See: *Economic Report of the President Transmitted to Congress January 1963*, Us Government Printing Office, Washington, 1963, p. XXV.

Advisers throughout the Kennedy Administration, wrote later that with the inauguration of Kennedy and then Johnson, Keynesian theory was applied in the practice of economic regulation. He wrote: "Their Administrations were largely free of the old mythology and wrong-headed economics which had viewed government deficits as synonymous with inflation; government spending increases as a likely source of depressions that would 'curl your hair'; and government debts as an immoral burden on our grandchildren".[1]

The idea of deficit financing as the main instrument for whipping up a sluggish economy to raise it to the level of its potentialities became even more flexible in that period. Heller defined it as follows: "The target is no longer budget balance every year or over the cycle, but balance ... at full employment."[2]

At the same time, the Administration tried to cut taxes as well. With that end in view, a number of special measures were put through, including shorter depreciation write-off periods and a seven-per cent tax allowance on new equipment investment, and also a tax revision. All these measures were aimed to increase investment demand and, to some extent, considering the intention to reduce income tax, a growth of consumer demand.

But the practice of capitalist development showed that this kind of attempt to tie in short-term and long-term techniques for influencing economic growth did not at all rid economic policy of its intrinsic contradictions which ultimately expressed the contradictions of capitalist reproduction itself. Let us bear in mind that in the 1960s long-term methods for exerting an influence on the economy (i.e., growth policy proper) were used in the favourable upswing conditions. In that period, economic growth policy coincided with the counter-recession policy, to the extent to which it was aimed to increase investment, both private and government, to extend employment and eliminate depressed areas, in short, to expand the extensive factors of growth.

But by the end of the 1960s, under the influence of overdevelopment and the growing inflationary increase in prices, there was initial evidence of serious contradictions between growth policy and the need to rein in inflation. With the "overheated" economy, fear of a subsequent depression induced urgent measures to limit the growth of investment and consumer resources through the use of all available forms of monetary and fiscal policies and also cutbacks in government spending. Inevitably, the casualties in this policy were the measures connected with the requirements of economic growth policy aimed to increase investment or modify their structure, and also to increase government infrastructure inputs. These contradictions were an expression of the contradictions of capitalist reproduction itself, for its unstable character tends to limit the scale and effectiveness of long-term economic regulation. These contradictions were most pronounced in the 1970s, when inflation became chronic and the requirements of anti-recession policy sharply limited the possibility for fulfilling the tasks of long-term growth.

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[1] Walter W. Heller, Op. cit., pp. 36-37.

[2] Ibid., p. 66.

CHAPTER ELEVEN

NEW DEBATES ON THE GOALS, FORMS AND SCALE OF GOVERNMENT INTERVENTION

1. Increasing Economic-Growth Contradictions and the Crisis of Government Regulation in the 1970s

The system of government regulation which took shape in the course of the 1950s and 1960s helped to reduce the cyclical fluctuations of the economy, to attain relatively high growth rates, to solve some structural problems and to use scientific and technical progress for the capitalist rationalisation of production and enhancement of its efficiency.

But from the late 1960s and early 1970s, it was becoming ever more obvious that this system no longer corresponded to the new demands being generated by the scientific and technological revolution and the contemporary level of socialisation of production.

The relatively high growth rates in the US economy in the 1960s and the mere increase in the size of the "national cake" failed to solve the social problems of US capitalism. Indeed, they were exacerbated by the mounting inflation and crises of the 1970s.

At the same time, this period also brought out some of the objective tendencies which made the maintenance of the old growth rates not just difficult under the existing balance between saving and consumption, but actually impossible.

The main one of these tendencies was connected with the higher cost of energy resources. The sharp increase in the prices of oil, gas and some types of raw materials made it imperative to restructure the economy and production techniques in the new conditions of the growing scarcity and high cost of these resources.

A comparison of the long-term movement of prices for fuel and energy resources and the cost of machinery and

Table 8

Wholesale Price Indexes

	Wholesale price indexes (1967–100)				*Increases for the period (%)*		
	1950	*1960*	*1970*	*1978*	*1951-1960*	*1961-1970*	*1971-1978*
Fuel and Energy	87.1	96.1	106.2	322.5	10.3	10.5	103.7
Machinery and plant	63.1	92.0	111.4	196.0	45.8	21.0	75.9

Source: *Economic Report of the President Transmitted to the Congress, January 1979*, pp. 248-49.

plant (Table 8) will show the fundamental break that occurred in the 1970s.

In the course of the 1950s and 1960s, the prices of machinery and plant were running well ahead of the prices for fuel and energy, which increased at the insignificant rate of 1 per cent a year, but in the 1970s the picture underwent a sharp change. In the 8 inflationary years from 1970 to 1978, the wholesale prices of machinery and plant went up by 7.3 per cent a year, while the prices of fuel and energy soared by 14.9 per cent a year.

The cost of economic growth—at the present level of technology, at any rate—tends to be increased by larger environment outlays. The construction of waste-treatment facilities was an important item of investment in many branches of the manufacturing and extractive industry and in energetics. One example will suffice: in 1976, the Council of Economic Advisers in the United States ordered the computation of the rate of private saving (share of gross business capital expenditures in the GNP) compatible with "full employment" (95 per cent of the labour force) in two variants: with and without observance of the environmental protection laws enacted from 1970 to 1972 and new outlays on energy programmes. It turned out that without these additional expenditures, the private saving rate necessary for maintaining the earlier growth rate and level of employment could in 1980 be lower than the average for the 1965-1970 period (9.9 per cent as against 10.4 per cent). Together with these expenditures, the rate was expected to go up from 1975 to 1980 to 12 per cent.[1]

US statistics showed that in the recent period the cost of building various waste-treatment facilities tended to run at 5 per cent of all business capital expenditures, coming to 15.7 per cent in metallurgy, 14-15 per cent in the paper industry, 10-11 per cent in the chemical industry, 8-12 per cent in the oil industry, and 9 per cent in electric-power plants.[2] But this means that without these compensating changes which increase the returns on capital expenditures, product increase per investment unit should slow down. Chairman of the Council of Economic Advisers Charles J. Schultze emphasised in one of his articles that growing environmental outlays tended to slow down conventionally measured growth. He added: "Improving the environment in the broader sense of the term is costly, drawing on resources that could have been used elsewhere. The costs must be paid. But the gains, in the form of environmental improvements, are not captured in our national income and other accounting data generally. Better access to cleaner air, for example, does not show up as an increase in GNP. What we do when we make environmental improvements is to accept lower economic growth, as conventionally measured, in return for an increment in unmeasured output, or welfare."[3]

Many facts testify that since the latter half of the 1960s there has been evidence of a negative trend in the United States in the movement of the basic indicators characterising the economic efficiency of social production. Thus, according to John W. Kendrick's computations, the growth rate for aggregate factor-productivity slowed down from 2.5 per cent in 1948-1966 to 1.7 per cent in 1966-1973, and the labour productivity growth rate in that period from 3.4 per cent to 2.4 per cent.[4] More detailed information is given in Table 9 and Table 10.

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[1] *Economic Report of the President Transmitted to the Congress January 1976*, p. 46.

[2] *Economic Report of the President Transmitted to the Congress January 1979*, p. 127.

[3] *Challenge*, March-April 1978, p. 68.

[4] *US Economic Growth from 1967 to 1986: Prospects, Problems and Patterns*, Vol. I, Productivity, Washington, 1976, p. 20.

Table 9

Labour Productivity, 1948-1978 (annual average rate)

	1948- -1955	*1955- -1965*	*1965- -1973*	*1973- -1977*	*1977- -1978*
Whole private sector	3.4	3.1	2.3	1.0	9.4
Without agriculture	2.7	2.6	2.0	0.9	0.6
Manufacturing industry	3.3	2.9	2.4	1.5	2.5
Other industries	2.4	2.4	1.7	0.6	– 0.3

Source: *Economic Report of the President Transmitted to the Congress, January 1979*, p.68.

Table 10

Labour Productivity Growth by Sector, 1950-1977

Productivity per man-hour

Sector	*1977 share of output*	*1950-1965*	*1965-1973*	*1973-1977*
Agriculture	2.9	4.9	3.6	3.0
Mining	1.5	4.3	1.9	– 6.1
Building	4.3	3.4	– 2.1	0.3
Manufacturing:				
non-durables	9.9	3.2	3.3	2.2
durables	14.4	2.5	2.2	1.2
Transportation	3.9	3.0	2.9	1.0
Communications	3.2	5.3	4.6	6.7
Trade				
wholesale	7.3	2.6	3.4	– 0.8
retail	10.0	2.3	2.1	0.8
Finance, insurance	15.4	1.6	0.2	2.3
Services	12.0	1.2	1.7	– 0.3
Government	12.5	0.4	0.5	0.1

Source: *Economic Report of the President Transmitted to the Congress, January 1979*, p. 71.

Let us note the fact that the productivity growth rates in the various industries were different.

Table 10 shows that there was an especially sharp drop in productivity in the mining industry, in trade and in the services.

Whereas in the mining industry, the decline in the man-hour indicators was connected precisely with the growing outlays on environmental protection, trade and services were among the sectors where productivity has always grown at a slower rate than those in the production sectors because of the lower level of mechanisation, the less favourable sex-age composition of the population, the prevalence of small businesses, and so on. That is why the general factors behind the declining productivity had the most influence on these sectors.

Among these general factors underlying the decline in labour productivity, the President's economic report for 1979 listed the following:

— first, a drop in the rate of capital-labour ratio growth from 3 per cent to 1.75 per cent a year. According to the computations presented, this induced a drop in labour productivity by 0.5 percentage points;

— second, substantial changes in the sex-age composition of the labour force, which accounted for another 0.3 percentage points;

— third, the growing costs of environmental protection and safety techniques (in accordance with the new legislation), which added another 0.3 percentage points; and

— fourth, a decline in the rate of growth of R and D outlays, especially on basic research, which helps to build up a reserve for scientific and technical progress and which is necessary for solving the cardinal scientific and technical problems in energetics and ecology.

The slowdown in productivity growth rate has an unfavourable effect on the movement of such a key national economic indicator of efficiency as capital productivity. Its movement (Table 11) will be seen from a comparison of the gross value of reproducible assets and the GNP.

The bottom line of this table, however tentative, shows a slight increase in capital productivity over the past decade, whereas in the 1960s it revealed a downward trend.

Table 11

Capital Productivity ($ bln)

	1967	*1970*	*1974*	*1975*
Gross reproducible assets	2,088.6	2,727.1	4,040.3	4,302.8
GNP	793.9	982.4	1,413.2	1,516.3
1 : 2	2.64	2.77	2.86	2.84

Source: *Statistical Abstract of the United States, 1977*, pp.430, 466.

Let us verify this consideration on the strength of the movement of two other indicators for the private sector of the economy (Table 12) by comparing the movement of the capital-labour ratio and labour productivity.

The movement of capital productivity is determined by the relation between labour productivity growth and the capital-labour ratio. If labour productivity grows faster than the capital-labour ratio, there is a growth of capital productivity, and vice versa. When the two are equal, capital productivity is stable.

Table 12

Capital Productivity in the Private Sector
(Growth Rate)

	1947-1976	*1947-1955*	*1956-1965*	*1966-1976*
Capital-labour ratio	2.0	2.2	2.1	1.9
Labour productivity	2.65*	3.2**	3.1	1.9
2–1	0.65	1.0	1.0	0

* 1950-1976
** 1950-1955

Source: *Statistical Abstract of the United States, 1977,* p.p. 68, 405, 466.

The comparison of the growth rate shows that in the 1950s and 1960s labour productivity tended to outrun the growth of the capital-labour ratio, and this ensured a growth of capital productivity by 1 per cent a year. The 1966-1976 period is characterised by similar rates of capital-labour ratio and productivity: both declined, the latter more considerably, as a result of which the growth of capital productivity ceased.

The most important factor behind the decline in the rate of growth generally, and of productivity in particular, is undoubtedly the slowdown in the investment process (Table 13).

The slowdown in investment growth was due to many factors which require special analysis. These are most closely connected with the profound structural changes which produce both the higher cost of economic growth and unwillingness on the part of monopoly capital to make new investments under the existing rate of return, and also with the general uncertainty and instability of prospects for economic growth stemming from chronic

Table 13

Annual Average Growth Rate by Five-Year Periods

Average Percentage Change of Five Years Ending in:	*Real Business Investment*	*Real GNP*	*Annual Unemployment Rate*
1964-1968	8.0	4.8	4.2
1969-1973	3.9	3.3	5.0
1974-1977	1.7	2.7	6.7

Source: *The Wall Street Journal*, June 26, 1978, p.10.

inflation. This has produced a vicious circle which is hard to break out of, for lower productivity and inflation are caused by flagging investment, while the absence of investment, for its part, prevents the growth of productivity, thereby further spurring the growth of inflation.

The continuous and chronic inflation running at a high rate is another distinctive element of economic growth in the 1970s sharpening its contradictions and causing it to slow down. In the postwar period, the rate of inflation has steadily grown, with the resultant change in the notions of what should be regarded as a "normal" level of inflation. Up until the mid-1960s, price increases of 1.5-2 per cent a year were regarded as "normal"; in the late 1960s and early 1970s, the figure had gone up to 3-5 per cent a year.

The 1970s ushered in galloping inflation. In 1973, 1974 and 1975, under the impact of the energy crisis, there was a double-digit growth of prices. For the first time, a cyclical crisis did not result in a drop, or at least a slowdown, of prices: the decline in production and the price spiral proceeded simultaneously, amplifying each other. The result was a totally new situation which came to be known as "stagflation", and which upset all the old notions about the mechanism of the cycle and inflation, and which made nonsense of the earlier methods of stabilisation policy. After 1975, the growth of prices was somewhat tempered, but it did not return even to the level of the first half of the 1970s, coming to an average of 6-8 per cent, so that a growth rate of 6 per cent was regarded as a desirable target, as the immediate goal of economic regulation (although in the more distant prospect the government sets the goal of reducing the inflation rate to 3 per cent, which appears to be highly unrealistic in the light of the current trends).

The ceaseless growth of prices increases the economic uncertainty and risk, and this has a negative effect on business, capital expenditures, especially long-term ones. Inflation also deepens the contradictions in government regulation of economic growth. Fearful of accelerating the inflationary process, the government has to effect measures boosting the economy with much circumspection, constantly mindful of the behaviour of prices and the monetary system as a whole. Once a side-effect of economic growth (the "price for growth", as US economists wrote about the "creeping" inflation of the 1950s and 1960s), inflation has become one of its key factors: the realisation of the goals of growth policy now largely depends on the solution of the inflation problem.

The Economic Report of the President in 1979 said that "the likelihood of achieving rapid and sustained economic growth while inflation remains high is very small. Inflation gives rise to forces that raise interest rates and discourage investment".[1]

The emphasis on social priorities, on the one hand, and the more complicated conditions of economic growth (the scarcity of some vital resources, the slowdown in the growth of efficiency and chronic inflation), on the other, called for a new approach to the government economic control and the need to make it centralised and spanning a longer period. The continued capitalist socialisation of production and the aggravation of its contradictions objectively required new and more balanced forms of government influence on economic growth. It was becoming ever more obvious that even the current problems—the need to overcome the crisis, stimulate revival or upswing, and to curb the growth of prices—could no longer be tackled with the traditional instruments of economic policy involving only regulation of aggregate demand. But the system of government regulation which had taken shape over the previous two or three decades turned out to be unprepared for coping with the new complicated problems.

All of this produced a deep crisis in government regulation, which in the 1970s gripped not only the US economic system, but also those of all the developed capitalist countries. The crisis signalled that the existing system of government involvement in the economy and the old system of relations between the monopolies and the government was no longer capable of coping with the new contradictions of capitalist development and meant that there was a need for a substantial restructuring of that system.

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[1] *Economic Report of the President Transmitted to the Congress January 1979*, pp. 110-11.

Capitalist system carries within itself a permanent source of internal contradictions. The coalescence of the monopolies and the government is a compromise between the urgent need for social regulation and planning of the economic processes, on the one hand, and the maintenance of the private-capitalist order as the basis for spontaneous and anarchic regulation, on the other. This keeps producing a constant clash between two counteracting forces and principles: planning and anarchy, government intervention and the market economy, dirigisme and private enterprise. No wonder, bourgeois economic writers today keep arguing on just where the "optimal" line for capitalism should be drawn to the expanding economic activity of the government.

One could say that the crisis of government regulation signifies a breach of this temporary "compromise" between planning and anarchy, a review of the old notions about the "optimal" limits of government economic activity, a collapse of the old forms and a quest for new ones to combine the power of the monopolies with that of the state in a single mechanism.

The crisis of government regulation has manifested itself in various forms.

The existing system of government regulation turned out to be ill-adapted to the solution of *global* economic problems produced by structural crises, above all the energy and ecological crises, whose solution calls for a *centralised* and *long-term* approach. It has proved invalid in face of the difficulties and contradictions determined by the uneven development under the growing internationalisation of the capitalist economy and operations by the international corporations, which make it necessary to concert international policy within the framework of the world capitalist economy.

It transpired that this system, oriented towards the regulation of market demand—its expansion in time of business decline, and its contraction in time of economic boom and growth of prices—is less than effective and is deeply contradictory in the new situation in which recession and inflation tend to develop simultaneously, with inflation generally becoming chronic and irreversible.

The long-term strategy of economic development which in the 1960s was marked by a trend towards the utmost industrial expansion also lay in ruins: far from helping to solve the long-term problem in the sphere of the economy and social relations (unemployment and inequality), it had in fact intensified the contradictions of capitalist reproduction and exacerbated the class struggle.

2. The End of Growthmanship

In the late 1960s and early 1970s, there was a spreading movement among the radical and democratic forces for a re-appraisal of the vital values, against the consumer society ideology which was being imposed on the American people by big business, and for a definite change of accent in the goals and purposes of economic growth policy. Scientists and public figures increasingly came to ponder the meaning and purposes of continued growth in material production and its socio-economic and ecological consequences. There was a spread of the idea that it was time to switch from the simple stimulation of industrial expansion to a system of national priorities the most important of which were a reduction of unemployment, of social inequality and poverty, a promotion of education and skills, an environmental protection, and so on.

The debates about the interaction of economic growth and the environment which began at the time and are still continuing had a considerable role to play in reorienting national priorities. The ecological crisis, which was produced by the irresponsible policy which allowed monopoly capital to plunder the natural resources, gave an ever sharper edge to the question of the quality of the environment as a key indicator of living standards. Whereas the industrial expansion tended to pollute and destroy nature, to spread disease and proliferate congested and noisy conurbations, was it not perhaps better to abandon such growth altogether? That was how the question was formulated by some participants in the discussion. Thus, in an article entitled "Is Growth Obsolete?", William Nordhaus and James Tobin wrote: "A long decade ago economic growth was the reigning fashion of political economy. It was simultaneously the hottest subject of economic theory and research, a slogan eagerly claimed by politicians of all stripes, and a serious objective of the policies of governments. The climate of opinion has changed dramatically. Disillusioned critics indict both economic science and economic policy for blind obeisance to aggregate material 'progress', and for neglect of its costly side effects."[1]

The discussion on the environment and a new system of social priorities gradually produced the concept of "quality of life" as the criterion and goal of economic growth. Both Republicans and Democrats adopted it as a plank in their party platforms, and it had to be considered also by government economic growth policy makers. As a result, its ultimate goal was now said to be not just a growth of the GNP, but an improvement of the system of indicators characterising the "quality of life", which include, apart from the GNP, the state of the environment, the level of employment, opportunities for education, the state of public health services, the available leisure time and the possibilities for using it, and so on.[2]

There was also a marked increase in the criticism of the traditional statistical indicator, the GNP, and attempts were made to compute a new synthetic indicator which took account of the costs of growth and which reflected the growth of "welfare" more adequately than the GNP had done.

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[1] *Selected Readings on Economic Growth in Relation to Population Increase, Natural Resources Availability, Environmental Quality Control, and Energy Needs*, US Government Printing Office, Washington, 1971, p. 67.

[2] Let us note that Walt W. Rostow, the well-known author of the stages-of-economic-growth theory, came forward with the concept of a new stage in socio-economic development. He suggested that the stage of "high mass consumption" (the final stage in his scheme, which he set forth in *The Stages of Economic Growth*) would be followed by a period of "the search for quality". That is the stage, he says, on which the United States entered in the late 1960s (Walt W. Rostow. "Economic Growth: Past and Future". In: *Growth in America*, Ed. by Chester L. Greenwood Press, Cooper., Westport-London, 1976, p. 44).

The adoption of "quality of life" as the goal of government economic growth policy is largely a reflection of the new forms of social demagogy designed to cover up the substance of government involvement, which is aimed to safeguard the capitalist mode of production. What is more, military expenditures, which consume a sizable part of the national budget, remain a high priority with the US Administration. But the fact is that unless military expenditures are cut back, much of what has been proclaimed in the programme for improving the "quality of life" is bound to remain a myth. It is an axiom that reconversion, detente and improvement of the "quality of life" are interconnected and interdependent. Nevertheless, behind all this demagogy over the "quality of life" slogan one must discern definite structural shifts caused by the need to tackle the impending new social problems with the use of the instruments of government economic policy.

The orientation towards "quality of life" indicators gave new emphasis to the question of what kind of growth rates need to be adopted by economic policy, a problem most forcefully formulated by the advocates of ecological approach to economic growth, who assume that if the environment is to be preserved and the excessive depletion of natural resources averted, the rate of growth must be slowed down. Following the publication of the first report by the Club of Rome[1], which gave a highly pessimistic assessment of the potentialities for the future growth of the world economy, many in the United States and other capitalist countries began to advocate "zero growth" and a gradual switch from exponential growth to full equilibrium (including zero population growth). However, by now such extreme views are advocated only by a handful of economists, most having realised that

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[1] Donella H. Meadows et al., *The Limits to Growth. A Report for the Club of Rome's Project on the Predicament of Mankind*, Earth Island Ltd., London, 1972.

"zero growth" is a utopian goal and that the human community is not threatened with total and rapid depletion of natural resources. It is perfectly obvious, moreover, that zero growth or even a very slow growth of the GNP can do nothing to solve the "quality of life" problem either. Economic growth is necessary, and that is incontestable, for without it it is impossible to ensure either an adequate level of employment, or a growth of living standards (with an eye to social priorities), or even the necessary quality of the environment, because all of this calls for vast capital expenditures on the building of purification facilities and a restructuring of production techniques.

However, none of this suggests that the real problems which sparked off the discussion in the first place and which, for their part, determine the possibility of some slowdown in growth over the long term (especially in countries like Japan, where growth was especially rapid) had altogether disappeared.

3. The Government Under the Fire of Criticism

In the 1960s, the debates over the factors which determine long-term economic growth were centred on what was crucial in increasing economic growth rates—supply or demand—which investments should be increased first—the traditional fixed capital investment or human investment which ensures the advance of knowledge and eventually increase the pace of technical progress.

In the latter half of the 1970s, economists of every school, both Keynesians and neoclassicists, were agreed that it was not an expansion of demand, but an expansion of production and an increase in supply that were central to the problems of economic growth. Nor was it supply generally, but above all the supply of scarcities and also higher productivity through further scientific and technical progress.

Nowadays, the question is not what is more important: human investment or real capital expansion investment. In the 1970s, the accumulation of capital was slowed down. It became obvious that the contrast between the two forms was an artificial one; economic growth requires the accumulation of real capital, without which technical progress is itself impossible or tends to lose momentum.

At the same time, there was a more heated debate on another problem. Whereas in the previous decade, the solution of growth problems was connected primarily with wider government intervention, in the 1970s this produced an obvious reaction: the government became a target of sharp criticism. The solution of growth problems was connected with curbs on direct government intervention in the economy, an increase in market mechanisms, an improvement in the competitive mechanism, and the establishment of a new "optimal" line of demarcation between private and government activity and new forms for their interaction (their "compromise").

The crisis of the old system of government regulation brought out new contradictions in the stand taken by various groups of monopoly capital and other social groups with respect to this regulation. This was manifested in growing criticism of government economic role, and in fresh debates over the limits and forms of government intervention, and on the relationship between government and private business in the economy.

The concept of the economic regulation was shaped in the 1970s in an atmosphere of growing differentiation of views and a contest of standpoints on the scale and forms of government intervention in the economy.

The existing system of government regulation came under the fire of criticism from "right", "left" and "centre". Dissatisfaction with it was voiced both by spokesmen of private monopoly capital, who wanted a reduction in the scale of direct government control; by left-radical forces, who regarded the bourgeois state as an important source of monopoly and accommodation with big capital; and by those who wanted to see government regulation extended and who were dissatisfied with the way this was being done. "Any appearance of national unity on this issue is illusory."[1]

The monopolies saw the dangers of "big government" as stemming above all from the extension of the social functions of the state, increase in public welfare spending, and new forms of legislation in this area which had imposed on big capital a number of fairly "burdensome" restrictions and so caused a growth of "unproductive costs". Democratic circles wanted to see vigorous activity by the government agencies set up in the United States in the 1960s for protection of the environment, control of output quality and safety techniques, while these were the very Federal agencies which have drawn the sharpest criticism from the ideologists of the monopolies.

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[1] *The Economist*, August 12, 1978, p. 60.

However, there are some forms of government involvement to which all the criticisers are more or less unanimously opposed. These are above all the government agencies set up back in the 1880s or after the 1929-1933 crisis for the purpose of limiting the undesirable effects of natural monopoly. "On most of the traditional regulatory organisations economists at the left-leaning Brookings Institution and the right-leaning American Enterprise Institute sound much the same. They think much of the regulation inhibits competition. They see deregulation as a way to curb inflation without pushing up unemployment... However, the coalition dissolves over the newer regulatory agencies established to pursue social ends ignored or undermined by market forces."[1]

The US press has carried numerous exposés to show that the industries subject to such regulation have, in effect, become monopolies. The strongest attacks have been levelled at two administrative bodies: the Federal Trade Commission, which controls freight haulage along the railways and highways, and the Civil Aeronautics Board. By fixing prices, controlling routes, and blocking access to these spheres for new firms, such government regulation agencies, their opponents contend, promote monopoly price-formation, growing costs and lower economic efficiency.

Let us note that the "right"-wing critics of government intervention in the processes of price-formation try to use the energy crisis to support the offensive by monopoly capital on the regulation of the energy prices. That is why some of the alternatives of Carter's energy programme envisaging the maintenance of some types of control over prices in the interests of consumers were defeated in the Congress.

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[1] *The Economist*, August 12-18, 1978, p. 60.

The critics of the existing system of government regulation claim that its main defects are excessive growth of the government mechanism, its bureaucratisation and lack of co-ordination among agencies whose task is to regulate and control various aspects of public life. It is true that lack of co-ordination and the multiplicity of agencies do hamper timely adoption and fulfilment of economic decisions. One economist says: "Beginning in the sixties, the number of federal agencies and programs exploded into hundreds. Most were created to deal with narrow issues. Few were co-ordinated with one another, many were crisis-oriented and ill-conceived, and the outcomes have often been mutually conflicting or contrary to what was intended."[1] All of this, he adds, has tended to increase the uncertainty and instability in the US economy. It has become obvious that the scale on which the government takes part in business decision-making and the extent to which it is geared into the economy are not at all adequate to the limitation of the spontaneous workings of the capitalist economy. The government itself frequently turns out to be guilty of upsetting proportionality and wasting public resources.

The criticism of government regulation has gone hand in hand with the development of a relatively new sphere of economic analysis known as "public economics", whose purpose is to work out techniques for evaluating the efficiency of government spending. Such "cost-benefit" studies are being intensively carried on by the American Enterprise Institute, which is famed as the bulwark of the "free market" ideology and which helps to shape the Republican Party's views. Thus, Murray L.Weidenbaum, a prominent member of its centre for the study of government regulation, says that any type of regulatory government activity yields both benefits and costs which need to be reckoned with in assessing the efficiency of government intervention. In the old days, he says, when production and living standards grew rapidly, the nation could well afford to applaud the benefits of regulation and ignore its costs. But now that the tightening of Federal controls has coincided with a slowdown in the growth of productivity and real living standards, the old tolerance of control can no longer be justified even economically.[1]

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[1] Tom Alexander, "The Deceptive Allure of National Planning", *Fortune*, March 1977, p. 149.

In a later article, Weidenbaum was even more explicit: "We need a fundamental change in the prevailing attitudes toward government involvement in business decision-making. The Congress should take a new and hard look at that massive array of government regulations that has accumulated over the past century. It should eliminate regulations, such as those in the transportation field, that interfere with the effective functioning of competitive market forces. The others, such as those in the health and safety areas, should be required to meet the rigorous standards of a benefit-cost test. This approach is not a guarantee of less government intervention in the economy, but it will help to ensure less costly and less disruptive regulation where government action is necessary."[2]

4. A Revision of the Budgetary Control Concept

The reaction against the further growth of government economic intervention and an urge to limit the scale and forms of this, affected above all the national budget, the key instrument of government involvement. Nor is it the role that it has to play, together with other monetary instruments, in short-term regulation, in business cycle policy, but in the country's long-term economic development.

Government finances in the United States have now reached tremendous proportions. In the 1960s and 1970s, the government as a whole, i.e., the Federal administration and the governments of the states and the local authorities continued, mainly by means of taxes, to redistribute a growing part of the Gross National Product. The share of all government expenditures went up from 30 per cent in

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[1] See: Murray L. Weidenbaum. "Government Regulations: the Inflationary Costs", *The Washington Post*, March 15, 1975.

[2] Murray L. Weidenbaum, "A Free Market Approach to Economic Policy", *Challenge*, March-April 1978, p. 41.

1960 to 36 per cent in 1975,[1] with a large part of this spending falling to the states and local authorities as a result of greater redistribution of revenues from the Federal budget to local budgets. In 1960, the share of Federal spending in total government expenditures came to about 60 per cent, in 1970 to 55 per cent, and in 1975 to 52 per cent.[2]

Nevertheless, Federal budget expenditures have continued to take up an ever greater share of the national income: in that same period, the share of the Federal budget in the GNP increased from 18.5 per cent to 22.5 per cent[3].

The present volume of government revenues and expenditures increasingly raises the question of the limit to government participation in the redistribution and use of the national income compatible with the private enterprise nature of capitalism. In the past few years, some analysts have argued that the slowdown of growth has resulted from growing government spending. Thus, a study by the European Institute (a branch of the Hermann Kahn Hudson Institute in the United States) argues, on the strength of a purely superficial connection between the government's share in the GNP and growth rate, that growth rate has been lowest where the share of the government has been largest (Japan, at the one pole, and the United States, Britain and Sweden, at the other). A review of such studies in one journal says: "The new studies differ in detail but in general they conclude that the toll taken by the expanding government sector in Western industrialised countries has been massive—cutting attainable growth rates by as much as one-third in the past 15 years."[4]

This purely superficial statement concerning the connection between the share of government spending in the GNP and the rate of growth says absolutely nothing about the causal connection between the two magnitudes, because the mechanism of their interconnection is extremely complicated, and its analysis needs to reckon with the structure of government revenues and the structure of government expenditures to show their impact on potential growth, the conditions of realisation and the socio-economic requirements of growth.

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[1] *Statistical Abstract of the United States, 1977*, pp. 278, 428.
[2] Ibid., p. 279.
[3] Ibid., p. 247.
[4] *Business Week*, October 18, 1976, p. 138.

Such studies substantiating the need to limit government spending spring from at least two main causes. First, the mounting protest by monopoly capital against the "excessive" government involvement in the redistribution of the national income and government participation in economic life, when the interests of private capital tend to be infringed. Second, the growing crisis of government financial system. Under the chronic inflation, the potentialities for deficit financing have been sharply narrowed down, while any further increase in the tax burden is both unpopular and a threat to the main conditions of economic growth: increasing private investment and expanding personal consumption.

It is not surprising, therefore, that in all the developed capitalist countries, the United States in the first place, there are growing demands to limit the rate at which government spending has grown, to balance the national budget and reduce the tax burden. There is a movement for a constitutional amendment binding the government to balance the budget of Federal revenues and expenditures. Such an amendment to the US Constitution would also tie the government's hands and limit the possibilities for economic regulation.

The changes in the social orientation have also had an effect on government policy. The Ford Administration, and then the Carter Administration, were forced to announce a policy of stabilising and gradually reducing that part of the "national cake" which is consumed by the government. The Carter Administration, in particular, set the task first of freezing the share of Federal revenues at 22 per cent, and then of reducing it to 20.3 per cent by 1982.

Consequently, there was something of a turnabout in the approach to fiscal policy reflecting the crisis of orthodox Keynesian theory and the practice of economic regulation. The Big Government ideology gave way to a Limited Government ideology; the deficit-financing ideology gave way to the balanced-budget ideology.

The overall line of limiting the growth of the share of the national product which is redistributed through the national budget is also determined by some new conceptual propositions pertaining both to the revenue and to the expenditure side of the budget.

Let us first consider one side of the coin: the structure of government revenues which is determined by the US fiscal system. Let us see what happens to the revenue side of the Federal budget and what a limitation or even the promised reduction in the share of the Federal budget has in store for the various types of tax revenues, i.e., ultimately, for the various types of tax-payers. The following table shows the long-term changes in the structure of government revenues over the past 20 years.

Table 14

Composition of Federal Budget Receipts
(Selected Fiscal Years, 1960-1983)

	1960	*1965*	*1970*	*1975*	*1978*	*1980*	*1983 (estimated)*
Total	100	100	100	100	100	100	100
Individual income tax	44.0		46.7	43.6	45.0	47.2	45.7
Corporate income tax	23.2		16.9	14.5	14.9	12.5	9.1
Social insurance tax and contributions	15.9		23.4	30.7	30.5	30.5	33.4
Exise taxes	12.6		8.1	5.9	4.0	4.7	6.2
All other	4.2		4.9	5.3	5.6	5.1	5.6

Sources: *Statistical Abstract of the United States, 1977,* p. 249; *The Budget of the US Government, Fiscal Year 1980,* US Government Printing Office, Washington, 1980; *Economic Report of the President Transmitted to the Congress January 1982,* Table B-72.

Table 14 shows some fairly clear-cut trends. While the share of income tax has remained steady—nearly one-half of all the government revenues—substantial structural changes have occurred in the other half. There has been a marked reduction in the share of revenues from corporate income tax, which fell from 23.2 per cent in 1960 to 12.5 per cent in 1980. Meanwhile, the share made up of mandatory life insurance payments has increased virtually by leaps and bounds, so that, alongside income tax, these have become a most important basis for the government financial system. There has been a further extension of the social base of taxation, while private business has been taking an ever smaller part in forming government revenues.

The reduction in the corporate income tax is largely connected with the special fiscal policy which is designed to subsidise private business through sizable shortfalls in tax revenues in accordance with the existing tax legislation on the basis of various tax credits, exemptions, and so on. All these amounts of tax credits and exemptions which the government fails to collect under its deliberate policy of encouraging private saving and in consequence of various other loopholes have come to be known in US fiscal practice as "tax expenditure".

US economists attach tremendous importance to this form of indirect government influence on the process of saving and regard it as an alternative to direct forms of government investment in the country's economic development. Since 1974, the total amount of tax expenditure is regularly listed in the Federal budget.

Thus, in 1976, the total tax expenditure reached \$95 billion, of which \$23 billion consisted of corporate tax credits. Of these \$23 billlion, the largest amounts consisted of investment tax credit (\$7.7 billion), a lower tax rate for the first \$50,000 of profits[1] (\$4.2 billion), and exemptions from taxation for some types of securities (\$2.8 billion). Lower income tax from a revaluation of capital stock is another major item (\$8.8 billion).[2] Altogether, a comparison of this amount of tax credits with the gross capital investment in the private sector suggests that at least 10 per cent of the saving was financed by the government in this indirect way. US economists regard the tax expenditure as an important instrument in stimulating private accumulation. "Tax expenditures are instruments of public policy and generally can be viewed as alternatives to other government fiscal action such as direct outlays and credit programs."[1]

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[1] The first \$50,000 of profit were taxed at 20-22 per cent, and all subsequent amounts at 48 per cent, and by 1980, at 46 per cent.

[2] *National Journal*, Vol. 9, January 22, 1977, p. 134.

Simultaneously, there was a reduction in the basic corporate income tax rate: over the recent years, it has gone down from 48 per cent to 44 per cent.

Consequently, the stabilisation of the share of the government in the GNP meant a policy of encouraging private saving, increasing undistributed profits at the disposal of private capital, and economic growth with emphasis on the private sector of the economy. To the objection that such has always been the practice in the history of the United States, we could say that in this case it is a matter of accent in economic policy and the general conception of the role and place of the government in economic growth. This accent has now clearly tilted in favour of the private sector.

The policy of stabilising the share of government expenditures in the GNP under chronic inflation makes it possible and even necessary to enhance fiscal policy.

Under the existing progressive system of taxation, the growth of the share of government revenue in the GNP is to some extent automatic. While tax rates remain unchanged (and despite all the possible tax loopholes) the growth of income over the long term of itself makes for a higher rate of growth of government tax revenues. This trend tends sharply to increase under a chronic prices spiral, when nominal incomes tend to grow rapidly, and are just as rapidly devalued. The result is a so-called tax-inflationary "surplus". The latter, promoting the potential growth of government revenue, poses this alternative: either to spend this "surplus" or to return it to the private sector or the consumers by means of a relevant tax policy. That is the issue on which there is a polarisation of radical-democratic and conservative-monopoly opinion, with the former favouring a redistribution of the "surplus" via the government so as to increase its welfare spending, and the latter, its withdrawal from the government and its transfer to the private sector.

It was President Ford who announced the policy of gradually modifying the structure of tax revenues so as to lower the share of corporate taxes, when he said: "In the long run, inflation and real economic growth will constantly push tax-payers into higher and higher tax brackets unless tax laws are changed. Some believe that these additional tax receipts should be spent on new Government programs. I do not. Instead I believe that the Congress should counteract the growing burden imposed by the tax system—and the reduction of private incentives that it implies—by periodically providing offsetting tax cuts while continuing to restrain the rate of growth of government spending."[1] This policy was also followed by President Carter.

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[1] *The Budget of the US Government, Fiscal Year 1977,* US Government Printing Office, Washington, 1977, p. 58.

Having decided to limit the growth of government revenues and to use the "tax-inflationary surplus" to reduce corporate income taxes and also to compensate the shrinking of real consumer demand by means of some measures to "return" a part of the income tax to the consumers, the government has acted above all in the interests of private-monopoly saving. This suggests the important conclusion, which reaffirms the reorientation of government regulation of which I spoke earlier, namely, a switch of emphasis from the Keynesian policy of demand regulation to the stimulation of supply mainly oriented towards private business and involving the use of indirect instruments. Whereas in the face of inadequate demand and oversaving, monopoly capital, which needed above all a sale conditions expansion, was inclined to accept the growing redistributive activity of the government, which—in accordance with Keynesian recipes—helped to convert a part of its aggregate profits into additional demand (government or consumer), the circumstances were now different. In the latter half of the 1970s, with investment incentives blunted by chronic inflation, and with the growing cost of some basic material resources, a declining labour productivity and new demands for environmental protection reducing the returns on per unit capital inputs, the monopolies were concerned not so much with an expansion of demand, as with a bolstering of the basis of private-monopoly saving and an increase in net profit.

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[1] *Economic Report of the President Transmitted to the Congress January 1977*, p. 4.

The "conservative" trend in the structure of government revenue illustrates the class nature of the capitalist state, reflecting the perfectly objective fact that expanded reproduction under capitalism is possible primarily on the basis of a capitalisation of profits. As soon as government redistribution begins to affect the essential mainsprings of this mechanism, the nature of the regulation itself begins to change: the government changes above all the forms of fiscal policy in order to "release" profits for their immediate purpose—investment.

Let us now see what happens to government expenditures (Table 15).

The table shows that the share of military expenditures

Table 15

Composition of Federal Unified Budget Outlays (Selected Fiscal Years, 1960-1987, per cent)

	1960	*1965*	*1970*	*1975*	*1980*	*1987*[1]
Total	100	100	100	100	100	100
I. Defense	48.2	38.9	38.7	24.5	21.5	35.4
II. Basic infrastructure	11.4	12.8	10.2	9.5	11.0	4.3
Agriculture	2.8	3.3	2.6	0.5	0.8	0.3
Energy, natural resources, environment	2.2	2.7	2.1	2.9	3.5	1.1
Commerce, community development, transportation	6.4	6.8	5.9	6.1	6.7	2.9
III. Social expenditure	27.4	30.2	37.9	52.7	53.6	50.4
Education and training	1.0	1.8	4.2	4.4	4.5	1.4
Medical care	1.2	1.5	6.3	8.3	10.1	12.0
Payments for individuals (excluding medical care)	25.2	26.9	27.4	40.0	39.0	37.0
including unemployment compensation	3.0	2.4	1.7	4.2	3.1	2.0
IV. Interest	9.0	8.7	9.4	9.5	11.2	11.9
V. Grants to states and local governments: Total	7.6	9.2	12.3	15.4	15.9	8.9

[1] Estimated by Council of Economic Advisers

Source: *Economic Report of the President ... 1982*, p.83.

dropped from 48.2 per cent in 1960 to 21.5 per cent in 1980. Let us recall that in 1979 Carter took steps to change this trend in order to increase the rate of growth of military spending, as a result of which its share began to increase. Besides, many items of military expenditures are not reflected in the official indicators under the head of "national defence". This markedly understates their scale. A number of studies made in the 1970s showed that total military-related spending is 42-43 per cent in excess of the official figures.[1] In addition, the absolute growth of military expenditures has continued at an ever faster rate.

That period was marked by a growth in the share of welfare spending, and this was promoted by a number of factors: new demands on the quality of manpower, the faster growth of prices in the sphere of the services (especially in public health), a changing demographic situation and, of course, pressure from the working class and democratic movement forcing the bourgeois government to make concessions so as to tone down the exacerbating class contradictions. Another reason was the much larger scale of permanent mass unemployment, which had become a chronic ill for many contingents of the working class.

With the government now taking the line of "austerity", with a simultaneous increase in military spending, cuts are being made in welfare programmes in the first place, and not only because they are of no use to monopoly capital, but also because they have no strong lobby like those backing the programmes which go to benefit corporations. Indeed, this state of affairs is also promoted by budget regulations. Over 70 per cent of budget expenditures are connected with long-term programmes or are covered by the existing legislation, so that they grow automatically. The government is entitled to dispose of only a quarter of the budget, the very part which includes many welfare programmes, like those in health care, urban development, housing construction, employment, education, etc. That is where the main cutbacks in government spending are envisaged. Thus, in the 1980 budget, 76 per cent of all expenditures were out of control. One-half of the remaining amount went to the Defense Department, so also being virtually immune. As a result, out of a $530 billion budget, the government was able to handle only about $50 billion, the items that had to carry the burden of the "economies" announced by the Carter Administration. As a result, its proposals were as follows. Reductions in spending:

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[1] *Problems and Contradictions in the US Economy*, Nauka, Moscow, 1978, p. 212 (in Russian).

on education and manpower training–1.6 per cent;
municipal and regional development–19.8 per cent;
aid to states and cities–1.1 per cent;
energetics–8.1 per cent; and
agriculture–30.6 per cent.[1]

Generally speaking, under pressure from the monopolies, the military-industrial complex in the first place, there was evidence in the latter half of the 1970s of a sharp slowdown in the growth of welfare spending and an increase in military spending, and the changes are clearly shown in the Table 16.

Table 16

Growth of Various Federal Budget Items
(Current Prices)

	1971	*1972*	*1973*	*1974*	*1975*	*1976*	*1977*	*1978*	*1979*	*1980*
Military expenditures	– 3.6	0.9	– 2.6	4.4	10.0	4.4	9.1	7.9	8.8	9.9
Human capital	22.3	16.5	11.4	13.5	27.6	17.4	8.9	9.1	10.1	9.3
Interest on national debt	7.1	5.1	10.7	22.8	10.4	11.7	10.1	15.8	20.0	8.0
All expenditures	7.5	9.7	6.5	9.1	21.0	12.3	9.9	11.9	9.4	7.7

Source: *National Journal*, January 27, 1979, p. 129.

Until about 1976, outlays on human resource ran well ahead of the growth of military spending, but the situation underwent a change in 1977: the two growth rates became roughly similar, and in 1980, under pressure from the military-industrial complex, it was decided to increase the growth of military expenditures not only as compared with welfare spending but also with growth of the GNP as a whole.

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[1] *National Journal*, Vol. II, January 27, 1979, p. 129.

Economic spending from the Federal budget is not large—roughly 10 per cent of the budget. But it has an important role to play in developing some spheres of the economy, its infrastructure. One-half of these expenditures is connected with the construction of highways, airports and waterway facilities. The other half consists of spending to aid agriculture, develop natural resources, protect the environment and develop energy. The share of the last three components went up from 2.2 per cent in 1960 to 3.5 per cent in 1980 because of the sharply increased government spending on the development of energy.

But in line with the Reagan Administration's conservative policy, it is exactly these expenditures that are to be cut especially drastically (mainly by placing financing of numerous programmes within the scope of activities of state and local authorities).

A crisis of government regulation in the 1970s confronted capitalism with a hard dilemma: there had arisen the need further to expand government intervention in tackling above all long-term structural problems.

The need for further increasing government expenditures sprang from the operation of a number of fundamental factors.

First, the sharpening of social contradictions and the mounting competition between the two systems—capitalism and socialism, which induced emphasis on social goals characterising the "quality of life" (employment, education, medical and utility services, improvement of the environment, etc.). These goals could be realised—even on a limited scale—only through larger government expenditures.

Second, the worsening of the conditions of reproduction caused by structural crises which ever more broadly involved the government in developing such capital-intensive areas of the infrastructure as energetics, transportation, and communications, and also the solution of ecological problems.

Third, in the solution of some global economic problems—especially in energetics and ecology, the further boosting of labour productivity which had revealed the tendency to decline, utmost importance attaches to a concentration of research along the key lines of scientific and technical progress, specifically the further development of basic research, all of which also calls for larger government outlays.

But the satisfaction of these growing requirements in state outlays of a socio-economic nature tends to run up against ever harder barriers. Pressure from above-mentioned factors was intensified precisely in the period in which the US government decided to whip up arms race and sharply step up military spending. Besides, just now the government seeks to limit any increase in the share of the national income being placed at its disposal.

The policy of stabilising the share of government revenues in the GNP, on the one hand, and the government's growing involvement in economic and especially social regulation, and the adoption of a set of long-term programmes for developing definite spheres of the economy, especially infrastructure, on the other, has called for a substantial modification of the procedures governing spending authorisation.

More emphasis is being made on the long-term approach to budget programming. It is very hard to effect changes in the budget over the short term. Many spending programmes increase automatically. Besides, there is an increase in the number of long-term programmes involving the government. The result is that a larger share of current expenditures consists of outlays approved in the past, while current budgets approved by the Congress (budget authorities) contain a growing share of appropriations for expenditure in the future. Thus, 29 per cent of 1977 budget expenditures consisted of appropriations for which authorisation had been enacted in the past; conversely, 35 per cent of the 1977 appropriations approved by the Congress consists of future spending.[1] As a result, in the 1970s, the uncontrolled part of expenditures increased from 63 per cent to 73 per cent.

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[1] *The Budget of the US Government, Fiscal Year 1977*, p. 6.

In 1974, the US Congress passed a special budgetary law under which primary importance attaches to a long-term system of national priorities. Accordingly, budgets are now being programmed for a five-year period, evidence of an effort to tie in budget programming with long-term strategic goals.

The 1979 Humphrey-Hawkins Bill required the tying in of budget programming with the programming of the main macroeconomic indicators, which is a definite step towards the solution of the problem of long-term co-ordination of budgetary policy with other forms and lines of government regulation.

These changes additionally highlight the urgency of the need for long-term and centralised regulation of the economy, on the one hand, and of the ways the bourgeois government has tried to tackle the problem, in its efforts to reach a "compromise of interests" to satisfy above all those of private-monopoly saving.

5. In Search of a US Style of "Planning"

The divergence of views concerning the goals, scale and instruments of government intervention in the economy was most pronounced on the question of planning. While the conservative ideologists of monopoly capital insist on limiting the scale of government intervention, more of its advocates have called for broader centralised regulation, more long-term orientation, and the adoption of "American-style planning".

The need for some form of nation-wide planning is dictated by the growing importance of the social priorities which have come to the fore as the goals of economic growth and also by the deep-going structural crises, efforts to overcome which induce the government to tackle ever more long-term economic problems involving tremendous capital outlays (energetics, transportation, communications).

As I have said, elements of long-term economic regulation appeared in the United States in the 1960s. The Kennedy Administration came out in favour of a purposeful policy of economic growth.

Business forecasting has proliferated and the framework of budget programming has been extended. One Soviet study says: "Whereas in the 1960s, under the Democratic Administration, there were signs of the government switching from short-term to long-term regulation, in the late 1960s (and this coincided with the installation of a Republican Administration) there were signs of a development of the systemic approach to government regulation, with ever greater efforts to tie it in with long-term aspects."[1] This was expressed in the elaboration of national priorities and the adoption of long-term sectoral programmes of development; this was paralleled by a restructuring of the government mechanism in order to increase its centralisation.

However, economic growth policy in the United States in that period was regarded as an aggregation of individual long-term programmes. The authors of a report prepared by the National Goals Research Staff, discussing the goals for a "national growth policy", asserted: "A national growth policy will not be a single policy. Rather, it will be composed of an entire constellation of policies that collectively will shape both the directions of our society in terms of its growth and the balance among many segments of the society in terms of priorities and interrelationships."[2]

However, the existence of functional plan programmes for tackling individual problems and developing individual sectors is not synonymous with nation-wide planning even in its capitalist version. This is emphasised by many US economists. Thus, the authors of a series of reports prepared in 1977 for the National Commission on Supplies and Shortages wrote: "Growth policy planning which systematically considers the broad consequences of major policy initiatives is virtually unknown in the United States."[3] No wonder then that with the sharp aggravation of growth problems in the United States in the 1970s, the increase in conservative trends was paralleled by a broad discussion about the need for economic planning and the quest for "American-style planning".

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[1] *USA: the Government and the Economy. The Mechanism of Government Regulation*, Nauka, Moscow, 1976, p. 12 (in Russian).

[2] *Selected Readings on Economic Growth...*, Op. cit., p. 142.

[3] "Forging America's Future. Strategies for National Growth and Development", *Challenge*, January-February, 1977, p. 23.

In 1975, a large group of economists, representatives of business and public bodies, including Wassily W. Leontief, John K. Galbraith, and W. Woodcock, produced a report substantiating the need for US economic planning. At the same time, Senators Hubert Humphrey and Jacob Javits put before the Congress a bill on balanced growth and economic planning, envisaging the working out of medium-term programmes for the country's economic development.

Assessing the bill, former US Energy Secretary Arthur Schlesinger, Jr., wrote: "The Humphrey-Javits bill should be regarded as innocuous in any other highly industrialised country. It would create an Economic Planning Board in the Executive Branch, establish procedures for industry and labour participation in the setting of economic targets and provide for congressional approval or disapproval of all plans developed by the board. The essence of the planning would be the gathering of information, the estimation of national resources and requirements and the co-ordination of national policies. There would be no enforcement authority, no interference with the making of private decisions, no revision of the pattern of ownership, no action except on the basis of legislation. The bill, in short, would give the nation the analytical, though not the enforcement, machinery to do for itself what every large corporation does every day in the way of advance planning."[1]

However, despite its "innocuos" character, the bill caused a storm, and its opponents were equally loud in claiming that the society would be bureaucratically stifled, that economic incentives for investment and innovation would disappear, that free consumer choice would be lost, and so on.[2] As a result, the bill was killed. But the advocates of "American-style planning" were not to be put down. They began to push through a veiled and somewhat toned down version of the bill—Humphrey-Hawkins Full Employment and Balanced Growth Act—which was put before the Congress first in 1975 and then in 1977, and was passed in 1978 (it is analysed below).

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[1] *The Wall Street Journal*, July 30, 1975, p. 10.

[2] Among the stream of papers on this subject, one should mention the collection of papers by some prominent US economists, expressing different views of the prospects of economic planning in the United States (Wassily Leontief, Herbert Stein, *The Economic System in an Age of Discontinuity: Long-Range Planning or Market Reliance*, New York University Press, New York, 1976).

Two main arguments are now being advanced in favour of planning. The first is the need to co-ordinate the existing forms of government regulation. Senator Hubert Humphrey said: "The Government now is deeply involved in every aspect of economic life, through its budget, its regulatory activities, its tax policies, and its purchasing operations. The issue is whether or not we will continue to be involved in a disorganised way, or will we begin co-ordinating the many things that the Government now does."[1]

The same idea is driven home in the above-mentioned series of reports in "Forging America's Future", whose authors repeatedly emphasise that over the long term "American-style planning" would even reduce the burden of government intervention in affairs affecting the private sector.

The second argument being advanced by the advocates of "American-style planning" is that the 1970s ushered in a new stage in the development of capitalism, when government regulation had to concentrate its efforts not so much on managing demand as on solving the problem of supply over the long term. The 1970s showed that, in contrast to the preceding period, the problem of increasing scarcity of resources was coming to the fore, and this meant the supply of resources which could not be increased on the basis of purely market incentives or through stimulation of aggregate demand by the government, meaning the industries turning out basic resources, like power, raw materials and foodstuffs; sections of the infrastructure like transportation and communications, and finally, the rehabilitation and protection of the environment. It was the need to solve such structural problems connected with production and supply that made long-term programming of the national economy as a whole imperative.

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[1] *Congressional Record,* Proceedings and Debates of the 94th Congress, First Session, February 28, 1975, p. S. 2846.

This idea was vigorously emphasised by Lawrence Klein in his introductory paper at the annual meeting of the American Economic Association in 1977. He said that the Keynesian system of regulation worked well so long as demand was the main problem. It is true that the need for its regulation continues to be an important aspect of the cyclical stabilisation of the economy. However, there was now also a need for another system of regulation with the accent switched to supply, because the solution of the problems that were meaningful today (including above all inflation and employment) was connected with the supply and quality of definite resources, and the growth of labour productivity, and not just with an expansion or contraction of demand. Theoretical studies, he said, should go on to an economic system which combined the Keyenesian model of final demand and a definition of income with the Leontief model of industrial flows.[1]

How is "American-style planning" envisaged by its advocates? They emphasise above all the information importance of the plan, and the numerous projects, articles and papers on this subject keep stressing the need for information-plan, forecasting plan and scenario-plan for economic development. The most elaborate project for the drawing up of plans was proposed by the well-known US economist and Nobel Prize winner Wassily Leontief, who says that the plan should describe the development of the economy as a whole, including its key sectors—industry, agriculture and transport—and also the Federal and local budgets for 4-5 years ahead. Leontief believes that there should be several alternative scenarios to allow a choice of possible ways to attain the set goals. The instrument for drawing up such alternative scenarios, he suggests, could be a system of input-output tables which could even now cover up to 700 industries. He writes: "As contrasted with aggregative, description and analysis of economic structures and relationships can, indeed, provide a suitable framework for a concrete instead of a purely symbolic description of alternative methods of production and the realistic delineation of alternative paths of technological change."[1]

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[1] A similar idea was expressed by Walt Rostow: "We have come to a time when, in my judgement, we cannot return to sustained full employment simply by having a slightly softer-hearted fellow at the Federal Reserve or balancing the Federal budget just a bit more. This time we are going to have to go back to full employment by investment on the supply side in those sectors where there is degeneration. And this is, for most of the economists of this generation, quite a revolutionary change. They had thought of investment in aggregate terms along with consumption and government outlays as determining the overall level of effective demand. They are not used to thinking in terms of sectoral requirements" (*The New York Times*, May 21, 1978).

The choice between alternative scenarios, he emphasises, is the key to rational planning. Such scenarios should be worked out not only on the national but also on the regional and local levels and must be duly dovetailed with each other. They should include alternative proposals for policies on energetics, the environment, foreign aid, defence, and so on.

Leontief says that to work out these scenarios an autonomous government agency should be set up to work with the executive system of the Federal government. It should also be connected with the corresponding organisations in 50 states and some major cities. The final version of the national economic plan should be approved by the Congress and should be "an end product of the typically American political logrolling and legislative wrangles".[2]

Leontief also considers in detail the instruments which should help fulfil the scenario. Among them are: selective control of capital and credit flows, taxation policy, and direct government investment. He emphasises that there is nothing new in these instruments and that they have long been used in the practice of economic regulation by the US government. The problem is—and it is also, incidentally, canvassed by most advocates of government regulation and planning—that just now these instruments are being used haphazardly, frequently in conflict with each other, so that the government does not so much regulate as intensify the anarchy and inefficiency of capitalist production. He writes: "The real trouble is that, at the present, the government not only does not know what road it wants to follow but does not even have a map. To make things worse, one member of the crew in charge presses down the accelerator, another pumps the brakes, a third turns the wheel, and the fourth sounds the horn. Is that the way to reach your destination safely?"[1]

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[1] Wassily Leontief, Herbert Stein, *The Economic System in an Age of Discontinuity: Long-Range Planning or Market Reliance*, p. 53.

[2] Ibid., p. 37.

According to Leontief and his associates, the plan should be the basis for co-ordinating and rationalising all the lines of activity of government agencies, the magic wand which should pull the US economy out of the bog of its economic troubles.

But for all the reservations about the absence of coercion and the purely informative character of the plans, monopoly capital and many of its ideologists—in the book here quoted, Leontief's opponent is Herbert Stein—feel that it is a great encroachment on the prerogatives of private business. That is why the more circumspect advocates of planning propose limited forms of activity for planning agencies, supplementing the programming of macroeconomic variables with the programming of the production and consumption only of the key goods and materials in short supply. They hold that the policy of national economic planning should have the following goals:

—greater agreement between various lines of economic policy from the standpoint of attaining strategic goals;

—reliable economic information by sectors for planning the consumption of key goods and materials;

—anticipation and assessment of the effects of individual events or government intervention in the economy as a whole; and

—the arrangement of research to bring out the problems which could arise in the future.

If we were to sum up the diverse notions about planning, its functions, scale and ways of realisation, it would turn out that the "American style" differs from the other "styles", above all from indicative French-type planning, in that it is even less elaborate and less binding, with an even greater bias for information, although the evolution of the French system of programming is also characterised by more emphasis on this very feature of capitalist "planning", the limits for whose effective use are laid down by the interests of monopoly capital.

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[1] Ibid., p. 59.

The practice of capitalist programming, notably French one, has long since shown its extremely limited effectiveness. The problem of who and how will fulfil the plan (programme) continues to be the most vulnerable problem which ultimately rests on the flimsy basis of "voluntary agreement" among the monopolies, the government and the trade unions, an arrangement that continues to be the utopia of a "mixed economy".

There is a sharp fight not only between the proponents and opponents of planning. There are also debates over another cardinal issue; whose interests will it serve? Democratic and radical circles which most vigorously insist on its introduction believe that it will help above all in the solution of social problems. They are quite right in assuming that big business will try to use capitalist planning for its own benefit. They have countered "corporate planning" (a term most frequently used by radical economists), which is taking shape on the basis of a deal between big business and the government, with various mostly utopian projects for detailed, "pluralistic", "communal" planning. However, the fortunes of this form of government regulation in the United States will be decided by the big corporations. Leontief is quite right in saying that "planning will come not when the radicals want it but when businessmen demand it".[1]

The outcome of the efforts by all these conflicting forces and interests is epitomised by the pathetic caricature of "planning", which, as a result of the stormy discussions of the 1970s, was produced by the Humphrey-Hawkins Full Employment and Balanced Growth Act, adopted at the end of 1978. (I have already said that the Humphrey-Hawkings bill was put forward in 1975 in place of the rejected Humphrey-Javits bill). The former provided that all the other national goals were to be subordinated to lowering unemployment to 3 per cent among persons of the age of 20 years and over. It also proposed the use of the whole range of government regulation instruments to attain long-range goals in areas like energetics, transportation, food, health, education, housing environment and aid to states and local authorities. As it was debated in the numerous congressional committees and sucommittees, the social aspects of this document were heavily trimmed, and the acceptable level of unemployment raised to 4 per cent. In this form the bill was recommended by the Council of Economic Advisers to supplement and modernise the 1946 Employment Act.

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[1] *Fortune*, March 1977, p. 148.

Under this act, the government's "plans" to lower the level of unemployment by 1983 to 4 per cent for workers over the age of 16 years, and to 3 per cent for those who are over the age of 20; to reduce the rate of consumer price growth to 3 per cent; to cut the share of Federal spending in the GNP and to balance the budget.

How unrealistic these "plans" are will be seen in the light of the Administration's current attempt to contain inflation and reduce the rate of unemployment. In his message to the Congress on January 30, 1980, the US President already announced the postponment of the deadlines for attaining these goals to 1985.

The Act is given a peculiar assessment by radical-minded economists. Thus, Robert Lekachman writes: "Humphrey-Hawkins at its birth embodied a muted vision of planning for social-democratic goals—full employment,definable social priorities, egalitarian redistribution, and broad group participation in the planning process. Hence nothing more accurately reveals the relative strength of conservative, liberal, and radical impulses in the United States than the version of Humphrey-Hawkins finally negotiated between its sponsors and the White House."[1]

It is true that there are some fundamentally important innovations which the Act has introduced into the concept and procedure of economic regulation. It enjoins the government to determine annual quantitative targets for the key economic indicators over a five-year period, including employment, unemployment, GNP, real income, productivity and prices.

It is assumed that the planning of the budget for a five-year period should become a component part of this five-year plan. It is, therefore, a far cry from the comprehensive plan envisaged by Leontief. Nevertheless, the basic macroeconomic indicators are still to be an object of government programming.

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[1] *Challenge*, March-April, 1978, p. 21.

The Humphrey-Hawkins Act, in contrast to the Employment Act of 1946, put forward a more differentiated system of measures for attaining the set goals. The Employment Act of 1946 oriented the Federal government towards the use of two basic macroeconomic instruments for economic regulation: the budget and the monetary system. Practice has shown that in present-day conditions, these two instruments are totally inadequate. Under the new Act, attainment of the set goals in the area of employment (4 per cent unemployment) and prices (3 per cent growth a year) requires more differentiated measures of intervention in socio-economic relations, among them:

—an "agreement" between the monopolies and the trade unions on wages. In other words, the conduct of a definite incomes policy;

—an active structural policy for developing lagging and depressed areas;

—a switch of accent in labour policy to skills promotion programmes, more employment in the government sector, better information, and new programmes for education and employment, specifically for young people and the poorest strata of the population; and

—special tax credits for enterprises employing young people and other persons classified as chronically unemployed.

The switch of emphasis from macroeconomic to microeconomic instruments of regulation is also a reflection of the general conceptual approach in the new Act. Whereas the Employment Act of 1946 provided the basis on which the concept of Big Government emerged and flourished, as the government constantly extended its intervention in the economy and justified the chronic Federal budget deficit, the Humphrey-Hawkins Act was designed to limit the direct forms of government intervention in private enterprise and so also to limit the growth of government spending. "The act responds to the widespread desire for reduced governmental intervention by calling for steady reductions in the share of the nation's output accounted for by governmental spending and by relying primarily on the private sector to meet the act's objectives. It also specifies that a balanced Federal budget consistent with the achievement of other goals, is to be an objective of national policy."[1]

The debates over "American-style planning" (together with a re-appraisal of the experience of government programming in France, Italy and Britain) are a reflection of the fundamentally important fact that the emergent phenomenon of capitalist planning tends, in effect, to develop from a form of government regulation of the economy frequently caused by extraordinary circumstances (as in Western Europe after the Second World War), into a stable element of the structure of developed capitalism. It is not being shaped on the basis of some worked out and ready model, but by trial and error and, what is most important, in bitter struggle between opposite classes, forces and interests and a slow adaptation of the lumbering and largely sluggish state machine of regulation to the sharply increased strength of monopoly capital.

The need for national, long-term regulation of the capitalist economy, for some form of planning, is dictated by the growing socialisation of the productive forces, which cry out for balanced organisation. It is also necessitated by the increasing importance of social priorities put forward as primary goals of economic growth, and, in addition, by the profound structural crises which tend to involve the government in tackling ever more long-range economic problems requiring vast capital outlays. The central problem here is how to co-ordinate the activity of disunited economic aggregations included in the mechanism of monopoly competition and seeking to maximise their profits, in order to attain the more general goals of growth and to develop the capitalist economy as a whole.

The theorists and practitioners of capitalist economic management tend to oversimplify the problem as one entailing "due combination of plan and market". They assert, moreover, that this is a central task facing any economic system, and that plan and market can allegedly range from the "American-style" and "French-type indicative planning" to "directive centralised planning" as practised in the socialist countries.

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[1] *Economic Report of the President Transmitted to the Congress January 1979*, p. 107.

But the incontrovertible fact is that there is a profound qualitative distinction between the capitalist planning and socialist planning, which determines, among other things, the extent to which it is mandatory and binding. Genuine national economic planning which predetermines the conversion of the plan's information potentialities into an effective instrument for its implementation is ensured only by social property in the means of production, which is why it cannot be practised in the capitalist countries. But the growing demand for the introduction of elements of planning is ultimately a reflection of the deep-seated contradiction betwen the social process of production and the private nature of appropriation, which dictates, on the one hand, the inevitability of, and on the other, the limits for the balanced management of the economy, limits which are determined by the interests of monopoly capital.

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